DOCUMENT RESUME

ED 109 385 95 CE 004 218

AUTHOR Kaufman, Jacob J.; Sumansky, John M.
TITLE Manpower Planning, Occupational Education, and Labor Mobility. DASP Technical Paper No. 1.
INSTITUTION North Carolina State Univ., Raleigh. Center for Occupational Education.
SPONS AGENCY National Inst. of Education (DHEW), Washington, D.C.
REPORT NO Tech-P-1
PUB DATE 74
CONTRACT NE-C-00-3-0069
NOTE 80p.

EDRS PRICE MF-$0.76 HC-$4.43 PLUS POSTAGE
DESCRIPTORS Agricultural Laborers; Area Studies; Demography; *Educational Planning; Geographic Location; Labor Market; *Labor Turnover, Literature Reviews; *Manpower Development; Manpower Utilization; Migration; Mobility; Negro Employment; *Occupational Mobility; Relocation; Tables (Data); Trend Analysis; Vocational Adjustment; *Vocational Education
IDENTIFIERS *Manpower Planning

ABSTRACT

The report details the implications of mobility for manpower planning, traces the impact of mobility on planning for the training and development of skilled manpower, and summarizes the factors influencing labor mobility drawn from a review of the relevant literature. The first section introduces the problem, summarizes factors affecting labor mobility, and discusses implications for manpower and educational planners. It emphasizes that criteria must be established so that the most efficient means of allocating resources and effort are used in manpower planning and in developing educational and training programs. Several criteria are discussed: market, social demand, rate of return, and manpower requirements. Also described are labor mobility and its impact on manpower and occupational education planning in the United States, as well as various approaches to planning (employer surveys, extrapolations of trends, econometric techniques, and the job vacancy-occupational outlook). The following section focuses on the central issue of geographic labor mobility and its determinants. The mobility of Negroes and agricultural workers is also examined. The conclusions stress the strengthening of the planner's role in developing training and educational programs, providing job opportunities, and other relevant services. A bibliography and appended tables complete the document. (JB)

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# MANPOWER PLANNING, OCCUPATIONAL EDUCATION, AND LABOR MOBILITY

JACOB J. KAUFMAN
and
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CE004218

center for occupational education

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# DASP

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D. W. Drewes, DASP Program Director

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ED109385

# MANPOWER PLANNING, OCCUPATIONAL EDUCATION, AND LABOR MOBILITY

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The research reported herein was conducted pursuant to a contract with the National Institute of Education, U. S. Department of Health, Education, and Welfare. Contractors undertaking such projects under government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official National Institute of Education position or policy.

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DASP Technical Paper No. 1

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Dynamic Analysis and Strategic Planning Program
Center for Occupational Education
North Carolina State University at Raleigh

1974

Contract No: NE-C-00-3-0069

# PREFACE

The DASP Program Division of the Center for Occupational Education is committed to assisting vocational education decision-makers in the identification, collection and use of policy-relevant information. As a part of the programmatic efforts to identify informational areas of policy relevance, Dr. Jacob Kaufman, a noted labor economist renowned for his work in vocational education research, and his distinguished colleague, Dr. John Sumansky, have been commissioned to examine the phenomenon of labor mobility as it relates to manpower planning and occupational education. In this paper, the authors detail the implications of mobility for manpower planning, trace out the impact of mobility on planning for the training and development of skilled manpower, and summarize the factors influencing labor mobility drawn from an extensive review of relevant literature. The authors conclude with a discussion of issues involved in planning to promote or impede the mobility of skilled and trained manpower.

Donald W. Drewes
DASP Program Director

# TABLE OF CONTENTS


| | Page |
|---|---|
| PREFACE | ii |
| LIST OF TABLES | iv |
| LIST OF FIGURES | v |
| INTRODUCTION TO THE PROBLEM, SUMMARY OF THE FACTORS AFFECTING LABOR MOBILITY, AND IMPLICATIONS FOR MANPOWER AND EDUCATIONAL PLANNERS | 1 |
| The Market Model | 7 |
| Other Alternatives | 10 |
| LABOR MOBILITY AND ITS IMPACT ON MANPOWER AND OCCUPATIONAL EDUCATION PLANNING IN THE UNITED STATES | 12 |
| Historical Sketch | 12 |
| Approaches to Planning | 13 |
| GEOGRAPHIC LABOR MOBILITY AND ITS DETERMINANTS: A REVIEW OF THE LITERATURE | 18 |
| Introduction | 18 |
| Determinants of Labor Mobility | 25 |
| Mobility of Negroes | 43 |
| Mobility of Agricultural Workers | 47 |
| FORECASTING GEOGRAPHIC MOBILITY | 51 |
| CONCLUSIONS | 53 |
| BIBLIOGRAPHY | 58 |
| APPENDIX | 66 |

# LIST OF TABLES


| Table | | Page |
|---|---|---|
| 1. | Costs and Returns of Relocating Workers | 20 |
| 2. | Regression and Correlation Results: Cohort Out-Migration as a Function of Cohort Population Size | 23 |
| 3. | Regression and Correlation Results: Cohort In-Migration per Capita as a Function of Five-Year Lead Change in Employment | 24 |
| 4. | Mobility of the Population by Age and Distance Moved, 1969 to 1970 | 29 |
| 5. | The Effect on Net Out-Migration of State Unemployment Rates, 1900 to 1960 | 29 |
| 6. | Coefficients of Regression between Net Migration Rates (1955 to 1960) by Occupation and Rates of Change in Total Employment (1950 to 1955), Average Unemployment Rates (1953 to 1957), and Median Full-Time Income, All Workers, 1950 | 35 |
| 7. | The Effect of Distance on Mobility Rates, 1965 to 1970 | 37 |
| 8. | Economic Status of Negro Lifetime Migrants and Non-Migrants | 46 |
| 9. | Gross Rate of Out-Migration from Agriculture, by Age, Sex, and Race | 48 |
| 10. | Gross Off-Farm Mobility Rates by Farm Employment Status | 48 |
| 11. | Percentage of Off-Farm Movers Who Migrated, by Race, Region, and Distance | 50 |

# LIST OF FIGURES

Figure — Page

1. Factors Affecting the Geographic Mobility of Labor . . . . . 3

# INTRODUCTION TO THE PROBLEM, SUMMARY OF THE FACTORS AFFECTING LABOR MOBILITY, AND IMPLICATIONS FOR MANPOWER AND EDUCATIONAL PLANNERS

The mobility of a nation's labor force may well be its most significant characteristic. Mobility affects both the demand for and supply of labor. It is also a significant determinant of the overall adaptability and flexibility of the labor force, and it reflects the ability of the labor force to adjust to changes in the location, level, and composition of demand. As a result, mobility--or the lack of it--can exert a great impact upon both the short- and long-term utilization of manpower.

Mobility is of three types: occupational, industrial, and geographic. Occupational mobility is further divided into two types: (1) movement among occupations over a worker's lifetime, and (2) intergenerational changes in occupations. Occupational mobility is important not only with regard to overall patterns of resource allocation but also with regard to the amount of economic opportunity available to individuals.

Data show that workers tend to move from occupations of lower earnings to those of higher earnings; thus, workers seem to be quite responsive to differential economic advantages. Studies of occupational changes among generations reveal that workers also tend to inherit their occupations from their parents. An unskilled worker (dishwasher, laborer, messenger) tends to change his occupation frequently, while a skilled worker is less likely to do so because the probability of his earning as much outside his trade is very small. Another common pattern of occupational change occurs when lawyers, engineers, and accountants move into management--shifts which do not necessarily involve a change of employers.

Interindustry labor mobility, on the other hand, is a movement by labor across industry lines which does not necessarily involve occupational or locational shifts. Economic theory suggests that mobility of this type again occurs because workers respond to differential economic advantage. Workers move toward those industries that can pay higher wages, i.e., the more efficient ones. In doing so, labor distributes itself most efficiently through the market mechanism. This factor is also the basic premise involved in occupational mobility; people move into those occupations that are economically advantageous.

Mobility among industries depends, to a large extent, on whether a workers' occupation is specialized to an industry. Where skills are specialized to one employer, voluntary mobility may be very low, and a worker may spend his entire career with the same employers.

Central to the issue of efficiency in the allocation of labor among industries and occupations is geographic mobility, defined in this paper as physical moves from one community to another. Geographic mobility occupies the most prominent position in the scheme of resource

allocation for two reasons. First, the industry in which an individual's economic advantage is greatest may be located in another community. In such a case, interindustry mobility which leads to an efficient allocation of human resources can only come about if geographic mobility also occurs. Second, there may be local needs for specifically trained occupations, but the locale may not have adequate educational and training facilities to meet the needs. In such cases, in order for an individual to move into the occupation which offers him the greatest economic advantage, he must move to another community to be trained and then move again to the community from which he came in order to seek out that employment opportunity.

Geographic labor mobility tends to be quite complex. Many times, geographic moves are not simple functions of, or reactions to, differential economic advantage. As Figure 1 indicates, age, family ties, climate, seniority, information, marital status, and economic conditions all affect the decision to move. Also involved in the move may be occupational and industrial changes.

The topic of geographic mobility has an added dimension in that entire communities (at least two in every case) are affected by the decision to move. In addition, the characteristics of the two communities must be examined to determine their effect on the geographic mobility of labor. Similarly, certain sets of benefits and costs that accrue to each community must be calculated--most importantly, when policy proposals regarding geographic mobility are to be made.

The role of the manpower and occupational education planner in such a complex environment is also necessarily complex. Characteristics of individuals, of families, of labor markets, of communities, and of general economic conditions must be carefully studied before a final decision can be made on whether to discourage or encourage mobility from one location to another.

Manpower and educational planners should be concerned with the geographic mobility of labor for five reasons:

The nation, even in the midst of a population boom, has never had equal population growth across all regions. Therefore, regions, in a sense, must compete for people--especially people who have skills vital to the growth and maintenance of the region. In the face of projected declines in population growth and shifts in the composition of the labor force, the competition for skilled people is likely to become more intense in the coming decades. Planners, at all levels will have to know what factors affect mobility in order to compete more effectively (Alonso, 1972, pp. 327-352).

Changes in technology place additional stress on the planner's ability to provide properly skilled workers to the labor force. The changing character of jobs necessitates the availability of differently skilled people to handle those jobs. In a spatial context, changing technology can be of two types: changes which affect one region but not

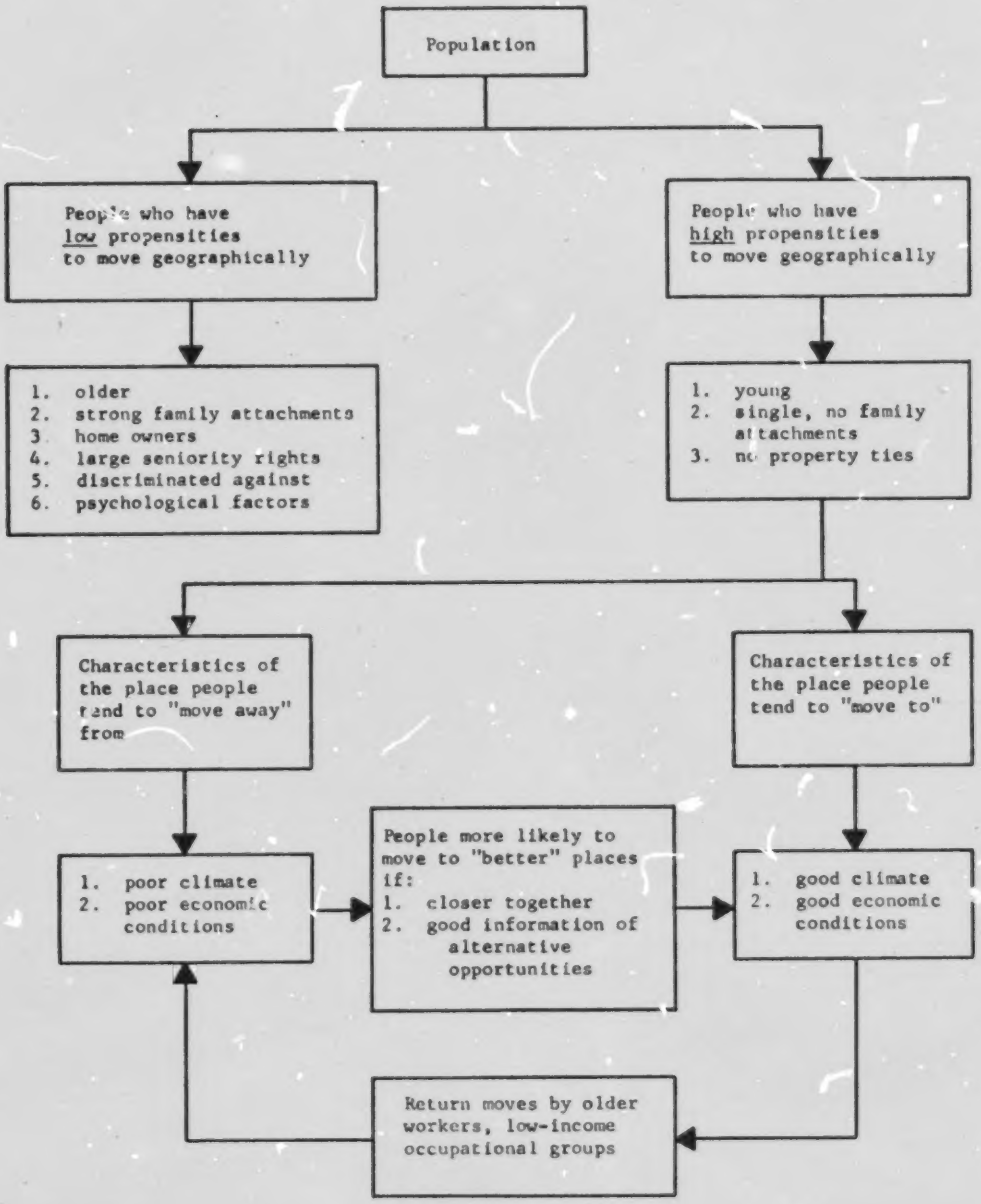
Population
People who have low propensities to move geographically
People who have high propensities to move geographically
1. older
2. strong family attachments
3. home owners
4. large seniority rights
5. discriminated against
6. psychological factors
1. young
2. single, no family attachments
3. no property ties
Characteristics of the place people tend to "move away" from
Characteristics of the place people tend to "move to"
1. poor climate
2. poor economic conditions
People more likely to move to "better" places if:
1. closer together
2. good information of alternative opportunities
1. good climate
2. good economic conditions
Return moves by older workers, low-income occupational groups

Figure 1. Factors Affecting the Geographic Mobility of Labor

another, and changes that are equal in all communities. In the first case, proper manpower utilization will result if labor is moved to those regions where it can either take advantage of the change in technical progress or get away from its disadvantages (Bodenhofer, 1967). In the case of changes in technology which are ubiquitous, the provision for adequately trained manpower is imperative--mobility alone is not sufficient to achieve proper utilization. Neither is mobility alone able to achieve proper utilization if the out-migrants of a region are not properly trained to take advantage of technical progress. The relationship among manpower planning, education, mobility, and overall manpower utilization is a crucial one.

Most industries find it more beneficial to locate in one area rather than another. The same is true of educational institutions. It is the exception if the same area offers the same locational advantages to all industries. Therefore, the output of educational and training institutions--skilled workers--must relocate if they are to be utilized fully. Planners need to know if they are exporters or importers of skilled workers and what the relative costs and benefits are of the present situation versus some alternative.

Planners of manpower and education at the regional level will be faced with making a value judgment on whose needs shall be served by local educational and training institutions. Planners may be forced to accept the possibility that locally educated and trained personnel will move to another community. In such cases, the "other" community reaps nearly all of the rewards while the community which trained the worker bears nearly all of the costs. From an efficiency and externality viewpoint, however, it may be beneficial for a community to follow a course of action which leads to the exportation of locally trained people, though justification to local constituents (taxpayers) for doing so is bound to be a problem. The value judgment enters in trying to decide whether regional resources should be devoted to meeting regional needs only, national ones, or both (Palmer, 1954; Morrison, 1972).

The individual occupies a central place in the entire manpower educational planning scheme. The contribution to his welfare of mobility enhanced by proper training and information cannot be underplayed. However, mobility or the lack of it can contribute to both his welfare and that of the community if there is "proper" planning and training. In both cases, a thorough knowledge of the factors that influence his mobility decision is necessary.

In setting forth the five reasons for planners to be concerned with mobility, the implicit assumption is that geographic mobility without the aid of planners would not be sufficient for the effective utilization of manpower. The reasons are straightforward. Regional unemployment, depressed economic areas, simultaneous existence of surplus and shortage in the same skills or industries, and the persistence of these conditions would not be evident if the "free market" were working efficiently. These conditions are manifestations of problems in human resource allocation that economic theory suggests could be alleviated by

proper resource mobility. As Morrison (1972) states, "In an economic sense, the continuous movement of population distributes persons with special qualifications where they are most needed." Nevertheless, Morrison concludes, as has been shown earlier, that migration is a highly complex process. He does not see the broad policy issues stemming from whether, say, out-migration from depressed areas should be encouraged or discouraged but, rather, how its "effectiveness can be strengthened and its adverse effects at origin and destination minimized." In judging the relative merits of migration, Morrison suggests qualitative cases for and against migration. The case for migration is based on the following premises.

1. The erroneous point has been made by some observers that most of the urban poor are in-migrants and that continued in-migration will increase the problems of poverty, ghettos, crimes, etc. The evidence, however, is contrary to such thinking. Rural-to-urban migration is not and has not been the major determinant of the problems of urban areas. Many of the poor, especially blacks, are products of urban areas; their's is the plight of the urban area and its conditions, not vice versa.

2. Some observers have implied that many of the poor rural-to-urban migrants would have been better off being poor in the rural areas. Again, the evidence is contrary to such thinking and shows that rural-to-urban migration reaps economic rewards in most cases.

3. According to Morrison, migration, coupled with manpower development programs, may be an efficient way to improve living standards for the rural poor. A worker relocation program would involve identifying labor surplus areas and areas experiencing continued shortages of workers and then attempting to reinforce streams of movement from the former to the latter (p. 310).

4. The rural-to-urban migration path is a powerful one and does not appear to be able to be overturned.

The case against migration rests basically on three propositions.

1. The losses to a community usually consist of its young, skilled, and more educated workers.

2. The remaining population--older, less educated, and less mobile--tends to be less able to cope with difficult economic conditions.

3. Loss of population in depressed areas does not necessarily result from out-migration but from the inability of the region to attract in-migrants.

The public policy implications of the relative merits of migration are as follows. First, those who depart are guided by "the location of friends and relatives rather than by new economic opportunities" (Morrison, p. 311), implying that a large part of geographic mobility is ill-directed. In line with this thinking, Morrison suggests that "there is a need to expand the flow of information about job opportunities elsewhere in the nation and to make this information readily available."

Second, (Morrison, p. 311)

> Steps are needed to improve and maintain the quality and mobility potential of the labor force in depressed areas both to facilitate further migration and to make these areas more attractive for economic development. Out-migration of the kind that has taken place in the past (and is likely to continue in the future) leaves behind a population having distinctive constellations of problems that require human development programs.

If there is evidence of economic problems to which mobility of human resources can contribute, then planners certainly must create those characteristics within individuals and communities that lead to their optimal performance and utilization within and among these communities. Very generally stated, the objective of manpower and educational planners is "to create the skills necessary to get the world's work done" by preparing individuals "for the kinds of jobs that will exist when they enter the labor market" (Parnes, 1969). However, <u>where</u> the jobs are and at what occupational level individuals enter the jobs must be added to the last statements. In order to get the world's work done, these two (training for the type of job <u>and</u> its location) must be done simultaneously. If trained workers are unwilling or unable to move to where the jobs are, or do not know that jobs exist elsewhere, society and the individual lose.

Lester (1966, p. 5) states:

> By means of more intelligent training and career decisions and greater adaptability of the nation's labor force, manpower planning can enhance satisfaction on the job, raise the quality and utilization of human resources, reduce the cost of job search and industry staffing, and thereby increase the output of the nation.

Proper planning should ultimately result in increased levels of output per unit of input--the economist's traditional notion of efficiency in the allocation of resources. The planner, whether he overtly states it or not, is concerned with matters of efficiency in the allocation of resources (Stromsdorfer, 1969, pp. 137-154).

The policy implications of manpower and educational planning are likely to result from a determination of whether there is too much or too little mobility. A planner's determination that there is too much geographic mobility suggests policies designed to reduce geographic

mobility, while a planner's determination that there is too little geographic mobility suggests policies aimed at increasing the rate of geographic mobility.

Out of these simple determinations flow a host of other situations that make manpower and educational planning efforts very complex. When dealing with many specific labor market groups there may be both too much and too little mobility in the same geographic area. High rates of migration for skilled young people or low rates of migration for unemployed persons who could better use their skills elsewhere present special problems to planners.

The development by planners of a proper set of policy responses to conditions of geographic labor mobility that hinder the probability of achieving planner's goals must ultimately rest on a thorough understanding of those factors that determine the geographic mobility of labor. Figure 1 displays only the more important factors affecting the geographic mobility of labor.

Proper manpower planning and the reaching of manpower objectives are activities that use resources. Criteria, therefore, must be established to see to it that the most efficient means of allocating resources and effort are used in reaching the objectives. Several criteria that vary in philosophical and practical degree have been suggested in the literature. These are social demand, rate of return, "manpower requirements," and the free market. The market model will be discussed first.

## The Market Model

The perfectly competitive theoretical model, when working properly, assures that all resources will be allocated most efficiently. This assurance exists because of certain critical assumptions under which the theoretical model operates. (Kaufman, et al., 1967, contains a discussion of "The Markets for and Mobility of Human Resources."

1. The economy is at, or always moving toward, full employment.

2. There is complete freedom of choice of all individuals in the economy--freedom in this context referring to a condition in which no individual has the power to influence the forces of market demand and supply.

3. There is a high degree of mobility in the economy, both functionally and geographically, of entrepreneurs and laborers. Facilities are available for moving, and employers and workers show a willingness to move, in response to differential opportunities.

4. There is a continuous flow of information among regions and economic units, helping to make everyone's economic choices rational.

5. All economic units exhibit maximizing behavior, employers with profits, consumers with utility per dollar spent, and workers with wages.

6. There is an absence of change in population, consumers' tastes, and technology.

An important conclusion of the perfectly competitive model is that firms maximize profits (or minimize losses) when they pay wages in an amount just equal to the market value of labor's incremental contribution to the firm's total output. Thus, there is a very strictly defined relationship between wages offered to labor and labor's incremental productivity. At any given wage rate, the firm must have the most productive labor available in order to produce a given level of output at minimum cost. The cost to the firm of producing an additional unit of output is defined as the cost to the firm of hiring an additional unit of labor divided by the additional output produced by that incremental unit of labor. Therefore, at given factor prices, the cost of producing any output can be minimized only if the labor hired is indeed the most productive. When one argues that the competitive model insures that goods are produced most efficiently, he is, in fact, saying that the most productive factors have correctly identified where he can earn the most and that he moves in response to differential economic opportunity.

It will not be necessary to discuss here the mechanics of the perfectly competitive model; these are outlined in any good textbook of economics. What we need to emphasize with respect to the competitive model in the context of this paper are (1) the importance of resource mobility to proper functioning of the labor market and (2) the degree to which the competitive model "explains" the actual movements of resources in the economy. This emphasis is necessary in order to identify those impediments to resource mobility that lead to a less than efficient performance of the labor market.

It must again be pointed out that the conclusions of the competitive model with respect to efficient resource allocation and the objectives of manpower and educational planners are one and the same. The perfectly competitive model assures that the most productive resources will find a place of employment that is mutually advantageous to both the employer and the employee. This necessarily results, in the long run, in a maximizing situation. As Bakke (1969) notes,

> a dichotomy between economic and social welfare . . . does not exist [since] the development of employability in people contributes to the satisfaction of their total human needs and aspirations only if that employability is useful to themselves and others, and if they can find employment in a healthy economy.

While the conclusions of the free market model are consistent with the goals of manpower and educational planners, reliance upon the market to satisfy these goals is not realistic because of three factors: (1) failure of even the theoretical model to provide for the production of "social goods"; (2) real world market imperfections; and (3) barriers to mobility of human resources. The third factor may, in fact, be considered as part of overall market imperfections, but it will be discussed separately for purposes of emphasis.

1. In providing for the production of social goods--i.e., those that have large amounts of externalities associated with them--the theoretical free market price mechanism breaks down. The welfare maximizing pricing criterion of the perfectly competitive model is that the price (P) charged for any good must be equal to the additional cost to society of producing one more unit of that good (marginal cost). The price represents the benefits received, and marginal cost represents the cost to society of producing a want-satisfying good or service. In most cases of private goods, the rule works satisfactorily, but in cases of national defense, police protection, education, etc., some inconsistencies arise between benefits received and costs incurred and between individuals and society.

   In education, for example, the additional cost to society of providing one more unit of education (if we are not moving from zero to one) is near zero. Economic theory would, therefore, imply that the socially optimum price to any individual should be zero. However, if all individuals were charged zero for the obvious benefits they receive, who would bear the real costs involved in maintaining educational staff, facilities, and services? Of course, in the case of education (as well as national defense, etc.) society as a whole bears the entire burden because all of society benefits. Society and the individual are both contributors to the costs of providing education; that is, all of society contributes even if everyone does not partake of the service, since the community of which they are a part benefits from any individual's decision to get an education. The implications for mobility and the external effects are obvious and will be discussed later.

2. The "real world" labor markets are not typical examples of perfect competition. Persistence of unemployment, big buyers and sellers of labor, imperfect information, and labor market segmentation are examples of imperfection (Kerr, 1954; Parnes, 1954).

3. Central to the issue of the competitiveness of the free market is labor mobility. Five barriers to mobility that exist in the real world are mentioned here:

a. Workers may get "locked into" jobs because of accumulated seniority, vacation, and benefit rights.

b. Poor education and little or no job skills may make them noncompetitive.

c. Racial, sex, or age discrimination may exist.

d. Wage structures may be such as to impede mobility.

e. Information about job opportunities in other areas may not exist.

Given these rather serious impediments to free market performance, it is not likely that planners' objectives could be met through the market mechanism alone. As a criterion for assisting planners, it is useful to point out the need for considering the possible character of mobility as a social good and the centrality of labor mobility to an efficient allocation of resources.

## Other Alternatives

Other planning criteria have been suggested, as mentioned earlier. One alternative, the social demand criterion, states that the supply of education should be provided to that point at which it is equal to the market demand for it. This criterion, however, does not adequately take into account the possibility that resources have alternative uses and does not provide any guidelines for dealing with the issue of society's valuation of the costs and benefits of education. Likewise, where we have market impediments and externalities, can we expect the market alone to allocate educational resources correctly? Another alternative, the cost-benefit or rate of return approach, is, theoretically at least, the most appealing. In considering education as an investment in human resources, this technique suggests that resources should be devoted to education up to that point at which the rate of return to education is equal to the rate of return on alternative investments. The data limitations and methodological complexities of this approach have thus far hindered its use by manpower and educational planners.

The most common manpower criterion used by manpower and educational planners today is the so-called "requirements" approach. Simply stated, certain assumptions are made by the planner regarding levels of output of particular industries. These assumed levels of output could be desired as socially optimum goals but are more likely to be probable goals. The size and composition of the labor force required to meet these levels of output are then calculated. Under usual circumstances, these requirements are translated into occupational categories and educational demands, with the educational system expected to gear either up or down to account for changes in the anticipated

requirements. The educational system takes demand as given and attempts to aid the market by providing a labor force in the correct quantity and quality to meet future demands.

To place this, the most important planning approach, in perspective, the historical development of manpower planning in the United States will be presented in the next section. Some techniques that have evolved within manpower planning areas will be discussed with regard to how they have been hampered because of failure to account adequately for labor mobility.

# LABOR MOBILITY AND ITS IMPACT ON MANPOWER AND OCCUPATIONAL EDUCATION PLANNING IN THE UNITED STATES

## Historical Sketch

The Employment Act of 1946 gave the government the task of creating and maintaining an economy "in a manner calculated to foster and promote competitive enterprise and the general welfare . . . maximum employment, production, and purchasing power." From 1947 to 1962, unemployment rates in the neighborhood of four percent were considered as representing "full employment." The 1962 Economic Report of the President, however, gave one of the early indications that if the four percent goal was ever to be reached or reduced, it would only be because of governmental efforts to "reduce the impact of structural unemployment" (p. 46). In 1964 more ambitious goals for a reduction in unemployment were proposed by the Subcommittee on Employment and Manpower (1964, p. 40). The means of achieving the goal (three percent unemployment) were (1) eliminating unemployment associated with a deficiency of aggregate demand and (2) operating through an aggressive and integrated manpower policy to reduce frictional and structural unemployment. By 1964, the labor force and its problems, having been disaggregated, were no longer treated as one-dimensional, and different goals were set for the problem groups (Gordon, 1965, p. 56). It is no coincidence, then, that the 1960's saw a host of legislation affecting manpower, education, training, and labor mobility. The Manpower Development and Training Act (MDTA) of 1962 and subsequent amendments encompassed all of the above-mentioned topics. While it was the Employment Act of 1946 that mandated governmental influence on employment, it was the MDTA of 1962 that specifically stated, as a matter of governmental policy and obligation, the need to appraise and develop the nation's manpower requirements. In this regard, Section 102 on evaluation, information, and research provided for research on the nature and causes of (or impediments to) labor mobility. Section 104 further instructed the Secretary of Labor to develop and carry out programs designed to determine how effective mobility programs would be in reducing differentials in unemployment rates among regions.*

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*The Manpower Report of the President of April, 1971, gave a report on the outcome of those pilot projects which aided in the relocation of more than 4,000 unemployed or underemployed workers and their families between 1965 and 1969. These projects provided three basic services: (1) information about job markets at proposed destinations, (2) money for moving, and (3) help in adjusting to the new environment. Subsequent studies of the people involved in these projects show these pilot projects, on the whole, to be effective. See additional discussion in the final section of this paper.

The MDTA was followed in 1963 by the Vocational Education Act and in 1964 by the Economic Opportunity Act. The former was concerned with maintaining, extending, and improving vocational education facilities, while the latter focused mainly on equalization of opportunity to obtain training and/or education.

In 1965, for example, the Manpower Report of the President called for a program of "more and better information on employment opportunities in job market areas throughout the country" (p. 146). The Vocational Education Act was amended in 1968 and called for employment service training that was "realistic in the light of actual or anticipated opportunities for gainful employment" (Young et al., 1972, p. 19).

Planning of manpower in this legislative and historical context was a natural extension of the legislation. Section 101 of the MDTA states that "it is in the national interest that current and prospective manpower shortages be identified." Section 102 goes on to call for the establishment of new "techniques and methods for detecting in advance the potential impact of automation, technological progress, [and] . . . changes in the structures of production and demand on the use of the Nation's human resources."

Planning of manpower and educational requirements in the United States has assumed some very diverse shapes and forms--some more rational than others. Lester (1966) points out that

> since manpower planning is based on the application of foresight, the first step in any planning program is the development of research so as to improve the forecasting, by skill categories, of demand and supply for the nation and for particular industries and areas.

Planners in the United States have certainly had forecasts available to them. The decade of the 1960's produced many variants of techniques and estimates of manpower demands and supplies for everything from particular occupations at the local level to aggregate projections of the labor force for the nation. The projections and techniques in use are employer surveys, extrapolations of trends, econometric techniques, and the job vacancy-occupational outlook approach.

## Approaches to Planning

### Employer Surveys

Employer surveys, particularly area skill surveys, are frequently used by educational planners, especially in vocational education, to arrive at estimates of future manpower needs. Their popularity stems from their ease of administration, low cost, and quickly obtainable results. Because area skill surveys are highly localized attempts at forecasting, they are subject to and complicated by differing rates of

labor mobility. In Oklahoma, for example, it has been estimated that one-fifth to one-third of vocational education graduates migrate out of the state for employment (Broden et al., 1970, p. 25). If the Oklahoma evidence is any indication of the magnitude of the mobility problem and what it means to the manpower and educational planner, a great deal more needs to be learned about mobility and incorporated into educational planning. Reliance on information gained from area skill surveys, which are based on employers' estimates of future manpower requirements, is not likely to have accounted for the migration that is likely to take place among jobs, among firms in the same geographic location, and among other areas--all of which would have large impacts on the interpretation by educational planners of the employers' estimates of manpower requirements.

## Extrapolation

The projection of past trends of employment and educational needs into the future rests on the assumption that various factors, including the mobility propensities of the population, continue as they have in the past. This approach has obvious problems and does not offer educational planners much hope of increasing their knowledge of the influence of labor mobility upon resource allocation.

## The Approach of Tomorrow's Manpower Needs

The Tomorrow's Manpower Needs (1969) (TMN) approach, as explained in four volumes, provides subnational areas with a methodology for making systematic estimates and analyses of the occupational composition of the labor force. The methodology developed in Volume I relies on the application of national data to situations in local areas. Forecasts of the levels of occupational use are made for the local area, using techniques ranging from educated guesses to sophisticated econometric techniques. These forecasts are made by estimating the expansion of total employment by industry and disaggregating employment into occupational categories. National data are used to adjust for anticipated changes in the occupational mix of the relevant industries.

The application of the TMN system, as much of a breakthrough as it was, falls short of conceptual ideals when it is used to make demand and supply estimates for local areas where such estimates "are the . . . most meaningful for . . . education planning and guidance purposes" (Young et al., 1972, pp. 22-23). It is further argued that short-range projections are more reliable than long-range projections and that national and state projections are more reliable than local projections because of geographic mobility (Williams, 1971, p. 7).

The following are quotes from TMN, Volume I, pp. 43, 68, concerning the present state of knowledge about various aspects of labor mobility.

> [The] area of job mobility is a most important one . . . , and a great deal of research is needed to determine its extent. The present state of information available on this subject may result in crude estimates of this factor . . . .
>
> The most important element in the size of the projected labor force of each State is the projection of the population of working age. In projecting the population . . . , the most critical variable is the magnitude and composition of net interstate migration. Our selection of the Series II migration assumption cannot be supported by specific evidence; it reflects our judgment that interstate migration is essentially purposive movement which occurs to a considerable degree in response to differential economic opportunities.*

How realistic these assumptions are, especially for local areas, is certainly questionable.

The Job Vacancy Approach

The job vacancy approach utilizes data on local labor market job openings and singles out those openings which have persisted as educational and training targets for some period of time. Any job that does not appear as an opening is assumed to have been filled, either through mobility or through training. Unfortunately, job vacancy data, as they appear today, seem to represent the opportunities for temporary employment more than for permanent employment. They do not adequately reflect discrepancies between job skill requirements and entry-level requirements. Employers resorting to private labor markets or using private labor market intermediaries would also tend to distort the reported vacancy situation.

Though the discussion, analyses, and criticisms of the various approaches to manpower/educational planning with an emphasis on the role of mobility in planning has not been exhaustive by any means, it is likely that a large number of the shortcomings in concepts and methodologies stem from limited data. The real dilemma at hand is that we cannot begin to know the kinds of data that will be necessary until we have developed firm concepts, theories, and methodologies capable of dealing with manpower and educational planning.

This is not to say, however, that manpower and educational planners have been without their successes. At least there is no longer

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*In migration Series II, it is assumed that state migration differentials will gradually be reduced to zero in about fifty years; i.e., "the number of persons migrating from a state will eventually be offset by an equal number of persons moving into the state" (TMN, Vol. I, 1969, p. 68).

a shortage of teachers or scientists. Occupational outlook forecasts made in 1949 in the Occupational Outlook Handbook proved qualitatively correct in 75 of 108 cases. Detailed analyses of the labor market allowed forecasters to foresee reductions in employment caused by changes in technology. Failures in the forecasts resulted from serious underestimation of blue-to-white-collar mobility (Goldstein, 1963, pp. 1135-1138).

An examination of the particular methods of generating forecasts of labor demand and supply for use in determining "requirements" for purposes of manpower and educational planning has revealed some interesting aspects of planning in the United States. The revelations refer primarily to two areas with which we are concerned here: (1) the limited application of presently available manpower forecasting techniques to educational planning, regardless of the weakness of the currently available methodologies, and (2) the almost universal weakness of supply and demand estimation procedures to account for labor mobility.

Young et al. (1972) in their review of twenty state vocational education plans, noted that twenty percent of the plans assumed that employment needs would increase at rates identical to one another while the remainder offered only qualitative statements of potential employment increases. Williams (1971, p. 8) noted that the state of Illinois established enrollment goals based not on the Illinois equivalent in 1970 but, rather, on what California's load was in 1957!

This absence of consideration of differences in labor market conditions and needs in state educational plans is probably a reflection of the quality of data available for such planning (Cohen, 1972, p. 14). Inadequate data likewise hamper the ability of the forecasting methodologies to produce estimates of future manpower needs that can be used by educational planners. Only a few of the defects with respect to inclusion of information on labor mobility have been presented here.*

Planning is that process which reduces the uncertainty of the future to a range of probabilities within which rational decisions can be made. Projections or forecasts enable a quantification of those uncertainties in terms of probable occurrences. The Tomorrow's Manpower Needs system is an example of the "requirements" approach mentioned earlier as the one used most frequently by state planners of education. The Manpower Development and Training Act of 1962, as amended in 1963, directed that those reports prepared by state employment security agencies be transmitted to state educational authorities after translating the occupational needs into training requirements. The actual translation is made difficult by the fact that the occupational categories found

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*For excellent overall summaries and critiques of forecasting methodologies see Morton (1968), Young et al. (1972), and Kidder (1972).

in the census (the primary source of occupational data) do not conform very closely to actual training needs in either a quantitative or a qualitative sense, nor do they reflect training questions such as those embodied in entry-level occupational definitions or questions relating to occupational substitutability. Information on mobility enters into the planning picture only in aggregate estimates of the labor force expected to be available in the subnational area. Increase in demand for a particular skill in another region is not included, and neither are potential regional supplies of an occupational group. These omissions may be due more to the limited amount of knowledge and data about these factors than to an oversight on the part of planners. A review and analysis of what is actually known about labor mobility is in order at this point.

# GEOGRAPHIC LABOR MOBILITY AND ITS DETERMINANTS: A REVIEW OF THE LITERATURE

## Introduction

The geographic mobility of labor is the focus of this paper because it is central to the issue of labor's being able to pursue its most advantageous opportunities. Contributions to job satisfaction, productivity, efficiency in production, and full employment all result from the "correct" movement of labor. Planners of manpower and education should be involved with geographic mobility on several fronts.

Planners need to identify "correct" relocations and the educational and training programs that are consistent with provisions for seeing to it that correct mobility occurs. Moreover, planners need to provide for adequate information systems and relocation schemes for seeing to it that the most productive unit of labor is fully employed.

The ability of planners to function correctly in pursuing the needs stated above will depend, to a large extent, on how well planners understand the social and economic forces at work in the propensity of various labor market groups to relocate. This section proceeds to discuss the determinants of geographic mobility.

Theoretically, mobility occurs when an individual perceives that an opportunity cost will result in his not moving. The larger that opportunity cost, the more likely he is to move. Opportunity costs in the case of labor mobility can be measured as the difference between the present value of his future earnings in his current place of employment and the present value of his future earnings in some alternative place of employment, minus moving costs and any other psychic costs involved. From this analysis, it can be seen that unsatisfactory conditions at his current place of employment can cause the gap to widen without any change occurring elsewhere--this factor could be called the "push" dimension of labor mobility. When the individual's present valuation of future earnings increases relative to some alternative location, "pull" from this other region is generally reflected. Under "normal" circumstances, both push and pull influences are at work simultaneously, and any definitive evidence of which of the two influences is stronger is as yet lacking. Parnes (1960, p. 28) noted that few people who voluntarily left jobs did so because they were "attracted into" a better job and found the pull phenomenon to be relatively unimportant in affecting presently employed workers. The possible existence and strength of the push phenomenon might lead us to expect higher rates of migration from lower- to higher-income areas, i.e., from unfavorable areas to more favorable ones. What some recent evidence has shown, however, is that the net loss of population from economically depressed areas is due more to a relatively low rate of in-migration than to high out-migration (U. S. Department of Commerce, 1964c).

Before dealing with the specifics of the factors affecting labor mobility, it would be useful to place the issue of human resource mobility into a cost-benefit framework and to review some of the public as well as the private costs and benefits of mobility.

As Sjaastad (1971) pointed out, migration typically involves costs and rewards to nonmigrants as well as to migrants, and, thus, there are social costs and benefits of migration as well as private ones. Any question of the extent to which migration is consistent with efficient resource allocation must weigh these social costs and benefits as well as the more obvious private ones. Since this paper is more interested in the factors which affect the mobility of labor, these social and private costs and benefits will be listed briefly. (The list is not, however, intended to be exhaustive.)

Social Costs

1. Loss of incremental returns to investment in education.
2. Loss of income resulting from movement.
3. Loss of output resulting in the using up of resources to accomplish the move.
4. Psychic loss to the community of declining population.

Social Benefits

1. More productive workers available in new communities.
2. Income generated.
3. Return to investment in education.
4. Psychic gain to community associated with growing community.

Private Costs

1. Actual cost of move.
2. Cost of search for alternative opportunities.
3. Income foregone in search, movement, and accepting new position.
4. Psychic costs of moving away from familiar people, places, and things.

Private Benefits

1. Income earned at new employment.

2. Psychic rewards of moving to new environment.

Table 1 shows an attempt to quantify the costs and returns of geographic mobility. It was constructed with the idea of an active program to relocate workers and, in fact, represents an analysis of the North Carolina Fund Mobility Project (Johnson, 1968). Phase I and Phase II represent different intensities of the program, with the second phase involving many more resources in pre-move and post-move counseling, finding and securing housing, etc.

Table 1. Costs and Returns of Relocating Workers

| Item | Phase I | | Phase II | |
|---|---|---|---|---|
| | Costs | Returns | Costs | Returns |
| Stayees | | | | |
| Foreign earnings | $ 1,041 | $ | $ 1,029 | $ |
| Direct costs | 31,050 | | 79,885 | |
| Total | 32,091 | 293,278 | 80,913 | 363,689 |
| Returnees | | | | |
| Foreign earnings | 1,784 | | 745 | |
| Direct costs | 52,868 | | 57,848 | |
| Costs of returning | 12,975 | | 6,900 | |
| Foreign earnings to return | 11,418 | | 6,013 | |
| Total | 79,045 | 129,230 | 71,506 | 66,000 |
| Grant total | $111,136 | $422,508 | $152,419 | $429,689 |

Source: Johnson (1968, p. 246).

Before beginning a more intensive review of the determinants of geographic mobility, several points must be made. First, geographic mobility may not always be motivated by a simple desire to switch geographic location. The desire to change occupations or industries or to move up career ladders within industries often forces geographic moves upon people. Geographic mobility, in this report, is treated as a probability of occurrence or a propensity to move. Occupational attachment, industrial attachment, and several other social-psychological-economic characteristics are treated as affecting those propensities.

In-migration and out-migration occur in all regions to varying degrees, and, from the viewpoint of the educational planner, both must be considered.

> The educational planner must recognize that some of the calculated manpower needs can--and doubtless will--be met by the in-migration of workers from other areas. Conversely, some of the training that takes place in the area is going to be dissipated . . . by virtue of out-migration (Parnes, 1969; Stromsdorfer, 1969).

The factors influencing decisions on the part of potential movers out of and into a region are complex, and the treatment of movers and nonmovers as homogeneous groups may lead to erroneous conclusions with respect to manpower needs and educational plans. Likewise, treating a region as though it had homogeneous characteristics might lead to erroneous conclusions. For example, in many cases both in-migration and out-migration occur in the same region. Net migration, if used to judge the contribution of mobility to reductions in income differentials, for instance, can conceivably lead to both rising and falling incomes within the state, depending on the relative skill levels of the in-migrants as compared to the out-migrants. Sjaastad (1971) argues quite convincingly that

> (1) net migration is not necessarily a useful measure for testing the labor market's ability to remove earnings differentials, [and] (2) disaggregation of both the migrant and parent population by at least age and occupation may be required to confirm [or deny] the alleged failure of migration to achieve a reasonably equal income distribution over space.

Ira Lowry (1966) noted that for any given region, the factors that determine out-migration differ from those that determine in-migration. Out-migration tends more to be a function of life-cycle considerations: young people are inclined to seek employment, education, and new residence away from home, while older persons are probably less mobile because of established homes, jobs, and friendships. The destination of out-migrants, however, is determined by job opportunities at the point of destination. Lowry used net migration among SMSA's in his analysis of populations among SMSA's. He found the following variables to be significant: natural increase in closed population, net change in enrollment of persons aged 14-25, changes in family income, net change in military personnel, and change in nonagricultural employment. Interestingly enough, over 80 percent of the variance was explained by a change in nonagricultural employment alone. From this, Lowry concluded that in-migration was more likely to be influenced by increased employment opportunities. If Lowry's hypotheses are true, in-migration should be more volatile than out-migration. For out-migration, based on aggregated data, Lowry found that regardless of conditions within areas, a constant proportion of persons in each cohort

out-migrates. Bramhall and Bryce (1969), in later work using disaggregated labor force data, tested Lowry's constant cohort population hypothesis with results as given in Table 2.*

Bramhall and Bryce's study of cohort population size and out-migration concurs with Lowry's. Where Bramhall and Bryce state cohort out-migration as a simple linear function of population size, population size systematically explains out-migration (Table 2). On the average, 86 percent of state variation in white male out-migration, 92 percent of white female out-migration, 86 percent of nonwhite male out-migration, and 81 percent of nonwhite female out-migration are explained by cohort population size alone. An examination of Bramhall and Bryce's results also indicates that men have a greater propensity to out-migrate than women and that the out-migration propensity of whites is greater than that of nonwhites. The lower propensity of nonwhites to out-migrate is undoubtedly related to the fact that their choice among alternatively attractive and receptive states is less than that of whites. Therefore, once an attractive state is found, the probability of out-migration from that state is less among nonwhites than among whites. For each sex-color cohort, it appears that persons aged 20-27 have the greatest propensity to out-migrate.

Bramhall and Bryce also tested Lowry's job opportunities hypotheses for in-migration and noted that a five-year lead change in employment opportunities is a statistically significant determinant of in-migration. On the average, about 40 percent of the state variation in white male in-migration, 35 percent of white female, 50 percent of nonwhite male, and nearly 50 percent of nonwhite female in-migration are explained by the five-year lead change in employment opportunities. (See Table 3.) Males tend to be more responsive in their interstate migration to employment opportunities than females for nearly all age cohorts. There are also consistently higher proportions of variation in nonwhite migration explained by job opportunities than for whites of both sexes. Bramhall and Bryce suggest, therefore, that the five-year lead time between employment change and migrant response may be more appropriate for nonwhites than for whites.

Lowry and Bramhall and Bryce suggest that a certain proportion of any population age group tends to move at given points in their lives. These proportions are represented by the regression coefficients in Tables 2 and 3. The influences to which these people respond and the likelihood that the influences will be constant over time are questions left unanswered by the analyses. Likewise, an out-migrant, by logic, is also an in-migrant and is, therefore, influenced by the same set of factors. The following discussion centers on the many different determinants of an individual's propensity to move.

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*See also Leonard Bower's "Comment on Interstate Migration," and Bramhall and Bryce's reply in the January, 1972, edition of Industrial and Labor Relations Review.

Table 2. Regression and Correlation Results: Cohort Out-Migration as a Function of Cohort Population Size

| Sex and Age | White | | | | Nonwhite | | | |
|---|---|---|---|---|---|---|---|---|
| | Intercept | Regression Coefficient | Standard Error of Regression Coefficient | Coefficient of Determination | Intercept | Regression Coefficient | Standard Error of Regression Coefficient | Coefficient of Determination |
| Male | | | | | | | | |
| 15-19 | 3720 | 0.109 | 0.006 | 0.884 | 150 | 0.072 | 0.005 | 0.860 |
| 20-24 | 7240 | 0.153 | 0.008 | 0.907 | 200 | 0.153 | 0.001 | 0.855 |
| 25-29 | 8850 | 0.108 | 0.001 | 0.705 | 380 | 0.102 | 0.009 | 0.780 |
| 30-34 | 5870 | 0.084 | 0.005 | 0.871 | 310 | 0.066 | 0.004 | 0.888 |
| 35-39 | 4450 | 0.076 | 0.005 | 0.863 | 210 | 0.054 | 0.003 | 0.923 |
| 40-44 | 3300 | 0.056 | 0.004 | 0.857 | 130 | 0.036 | 0.002 | 0.903 |
| 45-49 | 1860 | 0.050 | 0.003 | 0.860 | 100 | 0.031 | 0.002 | 0.860 |
| 50-54 | 1250 | 0.042 | 0.002 | 0.888 | 60 | 0.025 | 0.002 | 0.855 |
| 55-59 | 790 | 0.037 | 0.002 | 0.902 | 60 | 0.023 | 0.002 | 0.837 |
| 60-64 | 320 | 0.036 | 0.002 | 0.885 | 20 | 0.019 | 0.002 | 0.812 |
| Female | | | | | | | | |
| 15-19 | 3690 | 0.077 | 0.004 | 0.904 | 50 | 0.074 | 0.008 | 0.725 |
| 20-24 | 8680 | 0.101 | 0.006 | 0.882 | 90 | 0.140 | 0.017 | 0.659 |
| 25-29 | 6890 | 0.097 | 0.006 | 0.894 | 320 | 0.084 | 0.007 | 0.785 |
| 30-34 | 4590 | 0.075 | 0.003 | 0.934 | 280 | 0.055 | 0.003 | 0.885 |
| 35-39 | 3840 | 0.067 | 0.003 | 0.913 | 190 | 0.044 | 0.003 | 0.884 |
| 40-44 | 2610 | 0.048 | 0.002 | 0.931 | 90 | 0.033 | 0.002 | 0.886 |
| 45-49 | 1920 | 0.040 | 0.002 | 0.938 | 60 | 0.032 | 0.002 | 0.838 |
| 50-54 | 1340 | 0.036 | 0.002 | 0.940 | 40 | 0.029 | 0.002 | 0.825 |
| 55-59 | 810 | 0.037 | 0.002 | 0.936 | 30 | 0.032 | 0.002 | 0.849 |
| 60-64 | 180 | 0.044 | 0.002 | 0.917 | 30 | 0.025 | 0.002 | 0.784 |

Source: Bramhall and Bryce (1969).

Table 3. Regression and Correlation Results: Cohort In-Migration per Capita as a Function of Five-Year Lead Change in Employment

| Sex and Age | White | | | | Nonwhite | | | |
|---|---|---|---|---|---|---|---|---|
| | Intercept | Regression Coefficient | Standard Error of Regression Coefficient | Coefficient of Determination | Intercept | Regression Coefficient | Standard Error of Regression Coefficient | Coefficient of Determination |
| Male | | | | | | | | |
| 15-19 | 1.422 | 9.949 | 1.774 | 0.446 | 0.121 | 0.699 | 0.131 | 0.441 |
| 20-24 | 2.792 | 13.044 | 2.587 | 0.414 | 0.156 | 1.487 | 0.211 | 0.579 |
| 25-29 | 2.904 | 10.660 | 2.074 | 0.423 | 0.085 | 1.163 | 0.138 | 0.667 |
| 30-34 | 1.452 | 10.995 | 1.992 | 0.458 | 0.067 | 0.797 | 0.097 | 0.650 |
| 35-39 | 0.728 | 10.613 | 2.00C | 0.439 | 0.058 | 0.570 | 0.076 | 0.612 |
| 40-44 | 0.315 | 8.508 | 1.625 | 0.432 | 0.038 | 0.379 | 0.060 | 0.523 |
| 45-49 | 0.106 | 6.404 | 1.309 | 0.399 | 0.018 | 0.334 | 0.055 | 0.505 |
| 50-54 | -0.002 | 4.928 | 1.059 | 0.375 | 0.019 | 0.211 | 0.041 | 0.423 |
| 55-59 | -0.108 | 4.008 | 0.915 | 0.348 | 0.016 | 0.158 | 0.034 | 0.373 |
| 60-64 | -0.305 | 3.796 | 0.962 | 0.302 | 0.022 | 0.052 | 0.018 | 0.185 |
| Female | | | | | | | | |
| 15-19 | 1.269 | 7.632 | 1.836 | 0.324 | 0.114 | 0.657 | 0.125 | 0.435 |
| 20-24 | 2.591 | 9.845 | 2.302 | 0.337 | 0.149 | 1.202 | 0.198 | 0.506 |
| 25-29 | 2.287 | 10.426 | 2.378 | 0.348 | 0.118 | 0.922 | 0.126 | 0.599 |
| 30-34 | 1.095 | 10.333 | 2.224 | 0.375 | 0.080 | 0.671 | 0.098 | 0.565 |
| 35-39 | 0.485 | 10.231 | 2.122 | 0.392 | 0.054 | 0.483 | 0.070 | 0.567 |
| 40-44 | 0.128 | 7.525 | 1.557 | 0.393 | 0.039 | 0.305 | 0.054 | 0.468 |
| 45-49 | -0.042 | 6.128 | 1.336 | 0.369 | 0.023 | 0.266 | 0.048 | 0.457 |
| 50-54 | -0.016 | 4.978 | 1.123 | 0.353 | 0.031 | 0.154 | 0.031 | 0.402 |
| 55-59 | -0.282 | 4.729 | 1.143 | 0.322 | 0.023 | 0.144 | 0.031 | 0.365 |
| 60-64 | -0.530 | 5.092 | 1.281 | 0.305 | 0.014 | 0.097 | 0.021 | 0.384 |

Source: Bramhall and Bryce (1969).

Much of the research that has been conducted with respect to labor mobility has been devoted to testing the economic hypotheses that: (1) resource mobility should be from lower income to higher income regions, and (2) if such a movement has taken place, a reduction in unemployment rate differentials, income differentials, skills differentials, etc., would be observed as having taken place.

Rider (1962), Cullen (1956), and Woytinsky (1953) have examined evidence relating to wage differentials and skill dispersions among regions and industries over time and have concluded that the competitive hypothesis is not totally incorrect in that resources at least seem to be moving in the "right" direction. Gallaway et al. (1967) conclude that while the individual "economic" variables--and differences in them--are highly significant in explaining the mobility of labor, these economic variables are able to explain only about 25 percent of the total variation in labor mobility. This finding certainly implies that although people respond to differences in economic parameters, the phenomenon of resource mobility is much more complex than competitive theory tends to suggest.

Parnes (1960) concurs in stating that:

> All the empirical studies of labor markets made it abundantly clear that there are wide departures between the actual labor market behavior of both workers and employers and the assumptions on which the traditional theory of wage determination and labor allocation is based.

Economic parameters are, therefore, significant determinants of the geographic mobility of labor, but they do not, by themselves, explain all of resource movement. "Noneconomic" variables, such as age, climate, psychological factors, etc., must also be considered.

## Determinants of Labor Mobility

### Income

Income, or more specifically income differentials among communities, tends to increase the mobility potential of a particular region. This factor, a priori, signifies the assumed desire of workers to be income maximizers. The evidence, as seen in the research and analysis of the data given below, shows that, indeed, the economic hypothesis is a valid one. Although it is a significant factor in affecting mobility, however, it may not be the most important factor.

Gallaway et al. (1967) found, in testing both gross and net flows of populations among states, that differences in wage rates among states provided the expected positive sign, with the coefficients in both cases being significantly different from zero at the five percent level or better. A further result reported by Gallaway et al. was that the income variable explained patterns of net migration better than gross

migration, but in both cases the partial correlation coefficients were quite small--indicating that, while the income variable was significant and consistent with theory, there were other important factors which must be considered as giving rise to labor movement.

Raimon (1962), as a result of his investigations, concluded that "wage and income differences, at least for interstate mobility, appear to remain central in the allocation of labor supplies." He based his conclusions on evidence showing that the higher the net migration of a state, the higher the average annual earnings received by employed persons.

Further substantiation of income incentives to move was provided by a government survey showing that 17 percent of the migrants who were surveyed moved to obtain better or higher paying jobs (U. S. Department of Commerce, 1964b). An earlier U. S. Department of Labor study (1960) on the effect of a new industry on a depressed community also noted that improved earnings were a significant motive for workers to move to the area.

In noting that wage differentials exist between rural and urban areas, as well as between the South and the rest of the nation, Bunting (1961) tested the hypothesis that labor migrates in response to those differentials, as economic theory predicts. According to Bunting's data, labor movement that occurred within regions was consistent with the predictions of theory since (1) metropolitan areas (higher-wage areas) gained workers from the areas surrounding them; (2) over a three-state area, metropolitan areas gained at the expense of nonmetropolitan areas; and (3) the area of the three southern states under consideration lost workers to the rest of the nation.

If it can be assumed that workers do, in fact, act as maximizers and that they have information on alternative income opportunities, then the evidence is entirely consistent with the theoretical hypothesis. As mentioned earlier, the larger the opportunity cost (the larger the potential earnings) associated with the alternative location, the more likely a worker is to move since the present value of his future earnings stream is higher in the alternative location than in his present one. If a worker does not react to income differential incentives by moving, it may be because (1) he does not know of the alternatives and/or (2) he may not have enough to "push" him out of his present location, or there may be other factors "holding" him in his present location so that he is unable to react to push or pull influences.

Left unanswered by these analyses is the question: Are the incomes of mobile workers higher after they move than before? Lansing and Morgan (1967) examined the effect of a move upon the mover's income. They showed that for those with a college degree, the average income of those who had lived in only one state and had not moved more than 100 miles since their first job was $10,231 compared to $9,870 for all with a college degree. For those without a college degree, there was a nonsignificant difference in the same direction. "If anything,"

Lansing and Morgan reported, "mobility is associated with lower income." Lansing and Morgan also suggested that the place to which people moved made a difference with respect to the pre- and post-move incomes. Indeed, they found that people who left rural areas for urban ones and people who moved away from the South earned more than those who stayed. Their analysis showed, however, that movers into an area tended to earn less than people who already lived there. Those who moved from low-income to high-income areas were not able to earn as much as the high-income population. Lansing and Morgan claimed that "people who grew up in low-income areas may be at a permanent disadvantage in that they may have received an education of poorer quality as well as lower quantity." They cautioned--and this may well be the point that emphasizes the link among labor mobility, occupational education, and manpower planning--that "care must be taken not to confuse the effects of mobility with effects of disadvantages which the mobility reduced but could not eliminate" (p. 460).

Unemployment

Unemployment, and the response of the labor force to it in terms of mobility, is thought by some authors to have a relatively stronger bearing on mobility than income differentials (Lansing and Mueller, 1967). In the aggregate, areas of high unemployment would offer fewer employment opportunities and, therefore, a smaller earnings potential for potential movers. Two basic hypotheses with respect to this behavior can be specified: (1) the higher the rate of unemployment, the lower the incidence of job attachment to impede mobility; and (2) the fact of unemployment, or the possibility of it, causes a worker to adjust downward the present value of his future income stream in his present location, perhaps increasing the opportunity cost of his not moving to another location.

An additional factor comes into play when differential unemployment rates among regions are considered. If all regions are doing poorly in terms of the unemployment rate, push factors may still be at work, increasing the mobility propensities of the local population. However, if a given region faces unemployment rates higher than those of the surrounding regions or the nation, the pull influence of other employment states also works to increase the size of the local population that is potentially mobile.

Empirical evidence partially substantiates this hypothesis. A U. S. Department of Commerce report (1964b) stated that, within a particular survey group of movers, 18 percent of recent movers listed conditions of unemployment in their locations as among their reasons for moving.

Statistical testing of unemployment as a determinant of labor mobility by Gallaway et al. (1967) indicated that differential unemployment rates were significant at the five percent level in explaining

interstate migration flows. However, they found, as did Lansing and Mueller, that the unemployment variable was less important as an explanatory variable than was income. Together, the unemployment and income variables explained only about 19 percent of total variation in interstate migration. Examination of additional data showed that the mobility of people who had been subject to unemployment was barely higher than the mobility of people without unemployment experience (U. S. Department of Commerce, 1964c).

Several reasons can be offered to explain the relative insensitivity of labor mobility to unemployment rates. Once one relaxes the assumption that a region and its labor force are homogeneous, one immediately recognizes that some groups are immune to local labor market conditions by virtue of their occupational or industrial attachments. Other groups, and probably all to some extent, have ties to local areas, investments in homes, family, etc., that may cause a presently unemployed worker to "weather the storm" so to speak for fear of taking a loss on his investment. Likewise, unemployment generally lowers one's expectations of achieving a higher income elsewhere.

Looking at areas with high unemployment rates as a whole, net out-migration remains lower than would be expected because of relatively high rates of return migration. People sometimes move in response to either perceived or expected income differentials, and if these expectations are not realized, they may return to their original location, which at least is familiar to them (Sjaastad, 1971; Bogue et al., 1952). Additionally, as Table 4 shows, most moves are intracounty, and people often move only to find themselves still within the boundaries of a depressed area.

The unemployment rate of a region, both absolutely and relatively, tends to increase the mobility potential of a region. Nevertheless, it cannot be stated unequivocally that a high rate of unemployment will cause emigration, because of the many other factors at work in what is generally a very heterogeneous labor market.

Lowry (1966), previously mentioned, noted in his analysis that the effect of the local unemployment rate tended to affect in-migrants more than out-migrants since out-migrants tried to respond more to life-work cycle influences than to labor market conditions. In other words, local labor market conditions tended not to act as too great a push influence but more as a pull, attracting other workers to an area with a relatively low unemployment rate. Thus, if it can be accepted, as Lowry hypothesized, that a constant portion of the population continually out-migrates, then net out-migration should vary with the employment opportunities in the state, since in-migrants would come in direct response to lower unemployment rates in the state. Therefore, the higher the state's unemployment rate, the higher should be the state's net out-migration (assuming constant levels of out-migration). Statistically, over time, this hypothesis was confirmed by Blanco (1964). The results are given in Table 5.

Table 4. Mobility of the Population by Age and Distance Moved, 1969 to 1970

| Age Category | Percentage of Population Who Moved | Percentage Moving within State | Percentage Moving between States |
|---|---|---|---|
| 1-4 yrs. | 28.4 | 4.7 | 5.3 |
| 5-13 yrs. | 17.0 | 2.9 | 3.6 |
| 14-17 yrs. | 13.8 | 2.0 | 3.0 |
| 18-19 yrs. | 24.1 | 4.1 | 4.3 |
| 20-24 yrs. | 41.8 | 7.4 | 8.7 |
| 25-34 yrs. | 27.5 | 5.0 | 5.6 |
| 35-44 yrs. | 14.4 | 2.4 | 2.7 |
| 45-64 yrs. | 9.5 | 1.5 | 1.4 |
| 65+ yrs. | 8.6 | 1.6 | 1.0 |

Source: U. S. Department of Commerce (1971).

Table 5. The Effect on Net Out-Migration of State Unemployment Rates, 1900 to 1960

| Decade | Regression Coefficient | Standard Error | Coefficient of Correlation |
|---|---|---|---|
| 1900-10 | +1.16 | .15 | -.78 |
| 1920-30 | +2.79 | .16 | -.94 |
| 1930-40 | +1.45 | .09 | -.92 |
| 1940-50 | +1.47 | .09 | -.93 |
| 1950-60 | +1.54 | .15 | -.85 |

Source: Blanco (1964).

Therefore, given a one-unit increase in unemployment per thousand average population of a state, net out-migration would increase by 1.54 units per thousand average population of the state.

In examining the reaction of mobility to prospective employment opportunities, Lowry used change in civilian nonagricultural employment in SMSA's. As reported earlier, Lowry also tested the hypothesis that a constant proportion of the population tends to out-migrate while in-migration tends to be dependent on employment opportunities. For the period 1960 to 1963, Lowry estimated the equation which explained net migration as

$$\Delta\text{Net Migration} = -11.43 - 0.71\Delta \text{ Resident Population} + 2.20\Delta \text{ Employment Opportunities}$$

Thus, from the above equation (which "explains" well over 95 percent of the variation in the net migration) it can be expected that an increase of 100 in the resident population (without mobility) would diminish the number of net in-migrants by 71 persons while an increase of 100 jobs in the area would tend to increase the number of net in-migrants by 220.

It can be concluded that individuals, in making a decision to move to another geographic location, do take into account the overall characteristics of the region in that decision. Therefore, unemployment or employment opportunities in geographic regions do exert influences on people's decisions. Each move, however, tends to be a personal decision, and attention must, therefore, be paid to more individualized characteristics of the work force, such as age, current income, distance, occupational and industrial attachment, and psychological determinants, to name a few.

It is also probable that income and unemployment differentials affect different groups and individuals differently, and before one can understand the determinants of labor mobility on the whole for a region, it is necessary to know how these two economic factors and other factors affect individuals within a community. Knowing the composition of a region's population and labor force enables one to understand better and perhaps predict the future mobility behavior of a particular region. If a region has a disproportionately large number of people exhibiting high mobility characteristics, then that region is also likely to exhibit high mobility potential and vice-versa, with disproportionately small numbers of people in these high mobility categories.

## Age

The age of an individual has consistently been related to that individual's propensity to move. For a number of reasons, older persons are less likely to move to a different geographic area.

Referring once again to Bramhall and Bryce's tables on in- and out-migration (Tables 2 and 3), it can be seen that the mobility propensities of nearly all sex-race population groups decline continuously with age. In trying to relate this observed and empirically substantiated fact to economic theory, it is necessary to examine personal incentives to moving. It is true that the older the person, the smaller the present value of his future earning stream, and that the relationship between differential "economic" incentives and age is not substantially altered across regions. What age does tend to do, however, by lessening the size of the purely economic incentive, is to make the noneconomic incentives relatively more important. For example, as a person gets older, his job situation is fairly secure and his family ties perhaps stronger than they were when he was younger. If these noneconomic incentives could be quantified and included as part of his income stream, the present value of his future earnings stream in his present location would be greater than in the alternative location, and the opportunity cost would lie in moving--not in staying. (See Becker, 1964; Bodenhofer, 1967.)

Nearly every study on the factors affecting labor mobility mentions the fact that age and mobility propensities vary inversely, at least through most of the age groups considered to be part of the labor force. Table 4 further indicates the strength and consistency of that relationship. In Table 4, declines in mobility rates for the early age groups (1-17) reflect the reluctance of parents to move because of the presence of children of school age (Lansing and Mueller, 1967). The sharp jump noticed in the next two groups, covering ages 18-24, depicts those who enter the labor market for the first time after completing high school or college and who are, therefore, the most mobile age groups of all for both sexes and races. The age group 20-24 has not only the highest mobility frequency of all age groups, but also the highest frequency of long distance moves for both sexes. The proportion of movers after the age of 24 declines consistently until age 65.

Families as well as individuals exhibit nearly identical mobility patterns with regard to age because of the strength of the relationship between head of household and family. The effect of age on mobility propensities will be better understood when related to education and industrial and occupational attachment. Some of these effects are mentioned briefly here, and each will be dealt with in more detail later. Young people tend to change jobs more frequently, to be better educated, to have less job attachment because of pension plans and seniority rights, to have less investment in themselves and in physical capital, to have younger and fewer children, and to be single than their older counterparts--all of which contribute to higher rates of mobility among the young.

One additional aspect of age as it relates to mobility must be mentioned with regard to return movers, who, according to a two-year independent survey, made up 20 percent of all movers (Survey Research Center, 1967, p. 15). There seems to be a pattern whereby younger and

older people--compared to those in middle age groups--are more likely to move back to regions from which they originally moved. For the young, this phenomenon might be explained by unrealized expectations or misinformed judgments as to alternative opportunities in other locations (Singell, 1966).

Older people, having retired, are also drawn back to previous areas of residence for many reasons, the most important of which may be home or area attachment (U. S. Department of Labor, 1960, p. 26). Older workers who left an area because they were in low-wage industries provide us with an additional clue to why older workers tend to return "home," since it has been recognized by at least one researcher (Gallaway, 1966) that there exists a "reverse flow" of workers back into low-wage industries with increasing age. As for the middle age group, both Gallaway and the U. S. Department of Labor noticed that these tendencies were somewhat dormant during the middle years. Retirement, likewise, is not likely to occur during the middle years.

Age has been shown to be a significant determination of mobility, not so much because of the physiological processes of aging as because various other determinants vary considerably with age. One particular aspect relevant to planners is that those groups that are most prone to move--the young, for example--are the ones who come in greatest contact with the educational system. If a high degree of mobility were to be counted on to achieve overall efficiency in labor allocation, as well as efficiency in the use of resources devoted to education, then the mobility characteristics of the young certainly do not detract from achieving these goals.

Education

For people 25 years of age and over, the rate of geographic mobility increases nearly 50 percent as the educational level moves from zero to eight years of schooling to one year of college or more (U. S. Department of Commerce, 1971). Thus, as the educational level of an individual increases, so does his propensity to move.

Education enters as a factor affecting mobility through occupational attachment. Since most education is career-oriented, the more education one has, the more specific his occupation becomes. As a result, for many highly technical fields, job markets are nationalized, and labor in these fields must generally be imported to meet needs. In order to understand better the relationship of education to mobility, occupational attachment as it relates to mobility must be discussed, realizing, of course, that one's occupational attachment and educational level are generally so highly correlated as to be indistinguishable from one another, at least as far as influence on mobility is concerned.

Occupational Attachment

The importance of occupational attachment as a factor affecting labor mobility cannot be overstressed. In looking at the occupational structure of industries, it can be seen that there are many varied industries into which any single occupational group can fit. Therefore, when a shift in industrial composition occurs in any geographical area, it is relatively easy for the labor force to adapt to this shift. On the other hand, as Raimon (1964) points out, "It is change in the occupational more than in the industrial structure of employment that most strains the adaptive capacities of the labor force."

It has already been mentioned that mobility propensities increase with education. Therefore, those people in the occupational groups requiring higher levels of education and training would be expected to be the most prone to move. Evidence indicates that the most mobile occupational groups are professional and technical workers and managerial employees. Self-employed workers are the least mobile along with the bulk of blue-collar workers (U. S. Department of Commerce, 1964b, p. 14).

Areas having higher proportions of skilled workers also tend to have higher mobility rates (U. S. Department of Commerce, 1964e, pp. 7-8). Likewise, those people who tend to migrate out of particular communities tend to be more skilled than people who remain ( U. S. Department of Commerce, 1964c, p. 27). Tarver (1965), in his analysis, found a statistically significant and positive relationship between migration rates and the proportion of the labor force which is white collar.

There are several possible explanations of the mobility behavior of the more skilled occupational groups. Certain occupational skills become geographically specialized because of positive externalities associated with firms of a certain industry locating close to one another, such as advertising and finance firms in New York City. Generally, if one wishes to pursue one of these occupations in earnest, he will have to move.

Some labor markets tend to be national in scope while others are regionalized. As in the above cases with, say, advertising copywriters, there are very few local job opportunities, and unless one wished to change occupations, he would be forced to look to the national market.

From the viewpoint of the buyer of skilled versus unskilled labor, there is no need for national advertising for unskilled labor since unskilled labor tends to be ubiquitous. Skilled labor (including professional and managerial people) is not nearly so ubiquitous, and firms must either advertise nationally to staff facilities or physically transfer skilled personnel from an existing facility to a new one (U.S. Department of Labor, 1960, pp. 35-36).

If skilled and unskilled labor and the differences between them are treated as differences in the intensity of investment in both education and training, then an additional factor enters into the geographic mobility of the different occupational groups. The more highly skilled occupational groups show a greater reluctance to change occupations than do the lesser skilled groups (Burt, 1963; Stein, 1960; Bancroft and Garfinkle, 1963), which probably reflects the unwillingness of individuals in the more highly skilled occupational groups to sacrifice returns on their investments by transferring to a different occupation. If the more skilled people are more reluctant to change occupations and the job opportunities are less ubiquitous, then the more skilled (and/or better educated) workers would be expected to move further distances than their unskilled counterparts. Likewise, evidence shows the least amount of job attachment or the greatest amount of job mobility for unskilled workers, but a greater number of local job opportunities. Therefore, data should reveal a relatively high percentage of local mobility but a fairly small amount of long distance mobility for this occupational group. Assuming that the majority of skilled occupations (professionals, technical, managers, etc.) completed more than one year of college and the less-skilled completed less than a high school diploma, the evidence suggests these hypotheses to be true. For example, for males with one to three years of high school, 11.1 percent had made intracounty moves, compared to 10.6 percent for those with more than one year of college. For females, the differences in the percentages were even more striking--10.5 percent without a high school diploma had made intracounty moves compared to 8.6 percent with a high school diploma.

Over the period 1969-1970, only 1.9 percent of males (2.0 percent of females) with one to three years of high school who moved did so from one state to another, compared to 5.2 percent for males (4.4 percent females) with one year of college or more (U. S. Department of Commerce, 1966).

Data also suggest that the more skilled occupational groups are more responsive to economic incentives than are nonskilled workers. The greater sensitivity of the more skilled occupational groups to economic incentives is suggested by Kaun and Fechter's (1966) regression analysis of net migration rates for three different occupational groups. Although the occupational groups tested are not very dissimilar, the results are certainly suggestive (Table 6). Where A is a constant, Ej is percentage change in nonagricultural employment, Uj is the average unemployment rate, Yj is the median full-time income--all in the $j^{th}$ SMSA, the $i^{th}$ occupation.

The table shows that while the employment variable is significant for all three occupational groups, it is slightly larger for the professions, less for the managers, and smallest for the craftsmen. For all three occupational groups, the signs of the employment opportunities variable (lagged five years as in Lowry's and Bramhall and Bryce's analysis) is positive, indicating the tendency of a region's population to increase with this variable.

Table 6. Coefficients of Regression Between Net Migration Rates (1955 to 1960) by Occupation and Rates of Change in Total Employment (1950 to 1955), Average Unemployment Rates (1953 to 1957), and Median Full-Time Income, All Workers, 1959

| Net Migration | Coefficient | | | | |
|---|---|---|---|---|---|
| | A | Ej | Uj | Yj | $R^2$ |
| Craftsman and Foremen | -3.47 | .1615* | -.7634** | .0010 | .75 |
| Professional and Technical Workers | -42.60 | .2009* | -1.6012* | .0087* | .71 |
| Managers and Proprietors | -6.76 | .1783* | -.3301 | .0010 | .83 |

*significant at the .01 level.

**significant at the .025 level.

Source: Kaun and Fechter (1966).

Unemployment in the region displays the anticipated negative sign; it tends to suppress in-migration but does not affect out-migration, according to Lowry. In the case of professional occupations, the size of the response is two times as great as for craftsmen and five times as great as for managers. For managers, the unemployment variable is non-significant. The income variable is significant only for the professional occupation groups.

Additional evidence of differential mobility response of the occupational groups is provided by Lansing and Mueller (1967). They reported that, of their sample of approximately 3,200 movers who moved for economic reasons only, 23 percent were professionals, 12 percent were other white collar, 7 percent were blue collar, and 2 percent were not in the labor force. (See also Ladinsky, 1967).

These facts suggest several explanations:

1. Skilled workers, because of the nature of the market for their service, must seek out alternative opportunities--the alternatives being more clearly visible through economic signals such as wages, advancement opportunities, and the like.

2. Many skilled occupations are involuntarily mobile because of the transfer of firms or the transfer of jobs to other locations. Lansing and Mueller report that, of their survey group,

one-fourth of those moving for economic reasons did so because of a reassignment.

3. Workers in the higher skilled occupational groups tend to have fewer home and area attachments, thereby increasing the relative importance of economic differentials as a mobility incentive (U. S. Department of Labor, 1960; Batchelder, 1965).

4. The opportunity costs--of not moving because of the relatively higher income levels of the higher skilled occupations and the low probability of obtaining employment locally--are relatively high compared to nonskilled occupations.

In looking back over some of the evidence which relates occupational (and educational) attachment to mobility propensities, it can be seen that those groups which have the most to gain by moving and the most to lose by not moving, in dollar terms, are the white-collar or skilled professional groups. Regardless of whether this is a manifestation of limited local opportunities for these groups, it is clear that at least some mobility is rational and optimizing in an economic sense. However, with respect to other occupational groups, the less-skilled occupations are not reacting to economic incentives, as optimizing behavior on purely economic grounds would dictate.

Three issues tend to cloud judgment regarding the "goodness" or "badness" of the mobility patterns noticed among the less-skilled occupations. First, a great deal of local mobility is exhibited by the less-skilled and less-educated population, which may be optimizing behavior manifested at a local level. Second, if the demand for and supply of unskilled occupations are quite ubiquitous, is it necessary to be concerned about their mobility or lack of it? Third, if there are other than purely noneconomic factors at work in the decision to move, can we make any judgment at all about whether the apparent lack of mobility of any labor force group is irrational or nonoptimizing? These questions will be dealt with in greater detail later.

## Distance

Distance affects mobility of the labor force in three ways:

1. The further away the site of a potential relocation, the more it costs in actual movement charges to get there, thereby reducing the opportunity cost of not moving. If the opportunity cost of not moving was not great enough to begin with, distance--the movement cost--may be the major impeding factor to labor mobility.

2. The further away a potential job opportunity, the greater the cost is of searching out and identifying those alternative opportunities.

3. The distance that relatives are from potential movers represents another viable determinant of the mobility of an individual.

As the data in Table 7 indicate, the frequency or incidence of mobility decreases with distance; that is, people are more likely, on the average, to move within counties than between states.

Table 7. The Effect of Distance on Mobility Rates, 1965 to 1970

| Year | Same County | Between Counties within State | Between Noncontiguous States |
|---|---|---|---|
| 1969-70 | 11.7 | 3.1 | 2.5 |
| 1968-69 | 11.7 | 3.2 | 2.3 |
| 1967-68 | 11.8 | 3.4 | 2.5 |
| 1966-67 | 11.6 | 3.3 | 2.3 |
| 1965-66 | 12.7 | 3.3 | 2.2 |

Source: U. S. Department of Commerce (1971).

Slightly over one-half of all moves in the period from 1962 to 1963 involved distances of less than 200 miles, and only 14 percent were greater than 1,000 miles (U. S. Department of Commerce, 1964a). Although 18 percent of all moves in this period involved job transfers, the distances moved were approximately equal for both groups. Since the cost of movement of transfers is borne by the employer in most cases, the following discussion of costs will refer to those moves not involving job transfers.

Survey data collected by the government in 1962 to 1963 (U. S. Department of Commerce, 1964a) indicated that the burden of moving costs for 83 percent of the movers surveyed was light--involving less than 10 percent of the mover's annual income. An additional 14 percent classified moving costs as moderate--representing from 10 to 30 percent of their annual income. This study, as it related distance and the cost of moving, seemed to indicate that the direct cost of moving, in the vast majority of cases, was only a minor consideration.

While the direct cost of movement may not be an important factor in determining the distance of movement or the actual movement itself, perhaps the indirect costs and the opportunity costs of movement are partially responsible for the observed significant and negative relationship observed by Gallaway et al. (1967). Certainly, income foregone while traveling to a new job location increases as the distance to that new location increases. In this model the distance variable (from one state to another) supposedly acted as a proxy for all types of moving costs, including the earnings lost while moving and searching for a new position and the physical costs of the relocation. However, even with the distance variable added to the model, which also included an income and unemployment variable, the model was able to explain only about 28 percent of the variation in gross migration and 29 percent of net migration flows.

The second possible explanation for the finding (i.e., the further the distance of the job opportunity, the greater the cost of search) is the proposition that the wider the geographic area one has to search, the greater will be the cost associated with that search. Stigler (1971), for example, demonstrated that the marginal gain in wage rates decreased as the number of job searches increased--and, as has been argued as the number of job searches increased, the potential to move increases.

Although distance has been shown to be inversely related to mobility, the third possible influence on this relationship is that of family ties between potential movers and relatives in potential locations. There is some evidence that people are more likely to move to a distant place if they have relatives there, but the reasons for this finding are not conclusive. Some possible explanations are that relatives living in a distant place tend to offer some semblance of familiarity with the new location. Surveys have also shown the presence of friends and relatives in a distant city to be a valuable source of job and community information which, incidentally, is costless. The explanations on this point are inconclusive because it has been noticed that the more education a person has, the further he is likely to be from close relatives and the more mobile he is. One survey (Lansing and Mueller, 1967) showed that only 11 percent of those heads of families with a grammar school education lived in areas where they had no close relatives while 39 percent of college attendees lived away from close relatives.

Just as age has no innate causal effect on mobility, so, too, distance per se has no innate effect on mobility decisions. This relationship between distance and mobility must be expressed in economic terms to have significance. Simply stated, moving greater distances costs more in terms of direct costs, indirect costs, opportunity costs, psychic costs, and search costs. No study has yet included or has attempted to quantify all of the individual costs associated with moves of various distances.

The presence of close relatives in a worker's present location tends to reduce the potential to move. That reduction in potential

likewise seems to be greater for the less educated than for the more educated and seemingly increases in significance as a causal factor in the explanation of return moves.

It has also been suggested that current income levels of individuals may affect their mobility. Again, the evidence here leads to no definitive statement about causality. An examination of the data on mobility rates and income levels for the period 1969 to 1970 (U. S. Department of Commerce, 1971) reveals nothing substantially dissimilar about mobility behavior among income groups. Of the movers in 1969 to 1970, 13.9 percent had no incomes whatsoever, while a nearly identical percentage (13.6) had incomes greater than $15,500. Movers in the $3,000 to $4,999 income class were the most frequent movers between counties and between states. Individuals in the $5,000 to $6,999 income class represented the highest proportion of intracounty movers. The bell-shaped behavior curve for mobility rates and income levels also holds for single as well as married people but much more for married people. The mobility rates of single persons with income levels of $15,000 and over are the highest of all income groups of single persons. Single people with incomes of $7,000 and over have much higher mobility rates than do married persons in the same income range, but the relationship is reversed slightly for income levels less than $7,000. Widowed and divorced persons have the highest mobility rates of all groups, regardless of income level.

The varied response of mobility rates to income levels implies that income per se exerts no systematic influence on mobility propensities. This conclusion was also arrived at in a 1962 to 1963 survey conducted by the U. S. Department of Commerce (1964e). One explanation for this implication may be that the direct costs of moving, in the vast majority of cases, take up a constant proportion of incomes, and therefore the burden of moving costs is equally distributed over all income categories. Furthermore, if people move irrationally or because they are restless, there is no reason for anyone to assume that rationality and restlessness are functions of income level. Likewise, some moves are made as a result of either personal stress or economic duress, and these factors do not tend to be affected by one's income level.

The reasons for moving as cited above can also help to explain the fact that "there is no convincing evidence that movers actually have lower incomes before the move or higher incomes after the move" (Lansing and Mueller, 1967, p. 87). An additional explanation of this latter point was suggested by Ullman (1965) in his analyses of employment changes in high-wage industries relative to low-wage industries. Distress conditions caused by contracting employment opportunities suggest that a worker may be forced to accept a lower-paying job and, as Ullman pointed out, a worker's probability of finding employment at a lower wage is higher than finding an alternative at a higher wage rate. Earlier it was suggested that educational characteristics left movers in a poor competitive position.

One of the more prevalent characteristics of movers is that they tend to be repeaters. In the time period 1950 to 1963, those families who moved did so slightly more than two times on the average. Another study related that about one-third of all moves during the 1950s were made by people who had lived in the area one year or less. An additional 25 percent left before the end of three years. Overall, then, over half of all immigrants left their new locations before having spent three years in those locations. Nevertheless, a large group, 23 percent, who did move again did so only after residing in an area for eight years or more. The survey from which the above information was obtained showed, however, that four out of five moves were not in any sense return moves (Lansing and Mueller, 1967, p. 32).

The characteristics of repeat movers are not given in any currently available report, so the actual explanations for this type of mobility behavior can only be conjectured. Undoubtedly, most of the factors mentioned thus far--age, occupational attachment, and location of relatives--all play important parts in repetitive movements. More work needs be done in this area, especially to sharpen our knowledge of and approach to mobility problems with respect to treating each act of mobility as a separate, unique process, or treating mobility as more of a process flowing through time, with each decision being in part affected by all past mobility decisions and behavior.

## Family Ties

The importance to geographic mobility of the family group and ties to that group need to be emphasized.

Brown et al. (1963) stated:

> Branches [of the family group] that are already established in the areas of destination, as well as the stem at "home," provide a supportive structure and socializing agency for the individual during the process of migration. This support facilitates his adjustment to new circumstances in the migration system and helps to stabilize the migrant.

In addition to cushioning the "shock" of moving to a new location, family ties also act to help a potential mover find a job, locate a place to live, and in general facilitate his social and personal adjustment.

Evidence to the effect that people do move to where their relatives are, and in some cases back to where their relatives are, was provided by Brown et al. in their study of several Kentucky communities. While it may be that the kinds of families studied by Brown had stronger family ties than most, the evidence concerning the relationship between geographic mobility and the family group is certainly suggestive.

Brown et al.'s data showed that there was a strong tendency of members of the same family to cluster when they migrated. Of those family members who moved to someplace other than nearby neighborhoods, over 81 percent moved to the same small town in southern Ohio.

## Pension Plans

A growing controversy has arisen over whether labor resources have become immobilized because of the increase in pensions and other nonwage benefits. There are several reasons for believing that pension plans may have an effect on mobility. Most pension plans have rigid maximum hiring ages and, therefore, limit the opportunity for older workers to change jobs. The expectation of receiving a pension or additional pension benefits may induce workers to stay in their present jobs rather than change. Nonvested pension plans, if in effect, mean a loss of benefits if an employee leaves before the mandatory retirement age (U. S. Department of Labor, 1964). Certain multi-employer or pooled pension plans may include only employers in a given metropolitan or regional area and generally do not allow for movement outside these areas without loss of benefits (Miljus and Johnson, 1963). Provisions of vesting, when found in pension plans, tend to loosen somewhat their restrictive influence on labor mobility.

There are three basic types of vesting provisions, each of which exerts varying degrees of influence upon labor mobility:

1. Fully vested plans, with immediate vesting, guarantee immediate equity in the pension based on all of the employer's contributions if the worker leaves before retirement age.

2. Nonvested plans provide that the worker can withdraw only his contribution if he leaves before retirement.

3. Deferred vested plans specify a minimum length of service and/or age before full pension is guaranteed.

Ranking each of the plans according to their potential hindrance to mobility, the nonvested plan would be first, the deferred vested plan second, and the fully vested plan third.

In subjecting the higher education industry to an examination of the effects of nonvested pension systems on mobility of industry, Lurie (1965) concluded that "for the higher education industry as a whole, nonvested pension systems do not hinder mobility." With regard to the other two systems, it was noted that a worker may feel "locked into" a plan only during the period of time immediately before he qualifies for vesting (U. S. Department of Labor, 1964). The implication here is that the pension plan may postpone the desire to move somewhat, but this pent-up propensity may reveal itself in higher rates of mobility upon being vested or upon retirement.

In nearly all systems, the effect of pension plans upon mobility does not appear to be as strong as was once thought. Vesting priviliges, as of 1964, covered 60 percent of all workers included in pension plans and appear to be growing in size. Some pension plans are nationwide and, therefore, easily transferrable from one geographic location to another. Reciprocity agreements, where included, also tend to weaken the effect of pension plans on mobility.

Whether pension plans, vesting, and pooled plans tend to hinder mobility is clouded by several major issues. Firms with better pension plans (the better the plans, supposedly, the greater the hindrance to mobility) also possess certain other characteristics, and it is difficult, if not impossible, to separate their effects from the single effect of penion plans. For one thing, industries that are known as high-wage industries and are unionized usually have pension plans. All three characteristics (especially high wages) tend to impede mobility, even in a rational economic sense. Firms with pension plans, overall, seem to have more stable labor forces, with accession, separation, and resignation rates lower than those of nonpension firms (Miljus and Johnson, 1963).

On the whole, then, pension plans seem to have little effect upon the mobility propensities of individuals. This effect, however, tends to increase with age, at which time a host of other factors, perhaps much more important than pension plans, begins to come into play.

## Psychological Factors

It has been hypothesized that people who are mobile differ psychologically from those who are not, and several attempts have been made to support this hypothesis. The psychological variables mentioned in the literature as affecting mobility are (1) personal effectiveness, and (2) achievement versus security.

Personal effectiveness is most commonly defined as a measure of control over and participation in one's environment. It has been found that those people who are classified as low in personal effectiveness feel insecure financially and unsure or frustrated about their job prospects (Douvan, 1967; Douvan and Adelson, 1967).

In Lansing and Mueller's (1967) research, a person with a high sense of personal effectiveness (1) felt he had control over his life, (2) planned ahead, (3) carried out these plans in accordance with his desires, and (4) tended to finish things he started.

While Lansing and Mueller expected to find a strong relationship between effectiveness and mobility, the correlation coefficient resulting from tests of their sample was only .02. They thought that educational level, if included into the analysis in a multivariate context, might support the original hypothesis. The results of the simple correlation analysis and the multivariate analysis indicated that no

significant relationship existed between personal effectiveness and mobility. This conclusion also held for expressions of plans to move, but there were some indications that those who scored high on effectiveness were less likely to want to move. In conclusion, Lansing and Mueller stated that there is some possibility of a link which operates through education, but a relationship between effectiveness and mobility failed to appear in the study.

In following up this conclusion, Lansing and Mueller pointed out some important differences between people who ranked high in personal effectiveness and those who ranked low--even though their mobility rates may have been the same. The differences appeared in their reasons for moving:

1. The percent of recent movers giving economic reasons for their moves rose with effectiveness.

2. People who scored high on effectiveness were less likely to return to a previous place of residence.

3. At the college level, most people made job arrangements in advance, regardless of their sense of personal effectiveness.

4. At the grade school or high school level, people who scored high in effectiveness were more likely to have arranged their jobs in advance.

In much the same way as personal effectiveness, the achievement-security orientation of an individual, when measured against his mobility propensity (other things held constant), had no incremental effect on that propensity. Lansing and Mueller's general conclusion was that

> . . . geographically mobile people differ from the nonmobile in achievement-security orientation only to the extent that they have characteristics associated both with orientation and mobility. Especially well-educated people are more likely to be achievement oriented and also to move more.

Two subject areas deserve separate discussion with respect to mobility behavior, and these will be treated in the next two sections. They are the mobility of Negroes and the mobility of agricultural workers.

## Mobility of Negroes

In general, Negroes tend to be less mobile than whites, move less frequently, and believe there is a much weaker possibility of moving than do whites. Southern Negroes tend to be more mobile than those born in the North. There are several reasons for these tendencies.

Somers and Suits (1973), in their analysis, showed that economic factors affected the net migration of white families and black families in different ways and that their influence changed over the decade from 1960 to 1970. In general, higher regional incomes attracted migrants of all races from 1960 to 1970. While income was a significant determinant of net migration, however, the effect was not as strong for the blacks in 1950 to 1960 as it was for the blacks in 1960 to 1970. Regional rates of unemployment were a relatively unimportant determinant of the net migration rate. A third variable included by Sommers and Suits to account for differences among states was the size of welfare payments to families with dependent children. They concluded, after statistical analysis, that welfare payments directly influenced the locational choice of black families.

Also included in Sommers and Suits analysis were examinations of regional migration streams. For the population as a whole, relative to the Southeast, most regions were experiencing net out-migration. For Negroes, however, over the last 20 years, the migration stream from the South has moved in three directions: (1) East North Central, (2) Mountain and Pacific, and (3) Middle Atlantic and New England. While migration during 1950 to 1960 involved, most importantly, the northern and Great Lakes regions, the Far West emerged as a more popular region for Negro migration by 1970.

There are substantial differences in educational attainment and occupation between Negroes and whites, with Negroes having lower educational levels and the vast majority of them working as operatives, laborers, and service workers. Research on the return of blacks to education has shown the return to be lower than for whites.

> These discouraging results leave migration as almost the only systematic means of improving the relative income position of blacks, and furthermore the quick gains from migration are never likely to be as great as during the 1940s and 1950s. Even the economic value of migration may be overexaggerated if it is true that the most promising people migrate (Weiss and Williamson, 1972).

If, in fact, it has been true that even educated blacks from the South move north, then they are also at a disadvantage in the northern labor markets because there appears to have been systematic discrimination in the provision of southern black education. Weiss and Williamson point out, therefore, that from a policy standpoint it would behoove the North to invest in the education of blacks in the South. In addition, they say, the black-white income differential should diminish because larger numbers of blacks are receiving education in the North.

In Weiss and Williamson's estimation of the variables affecting black income, it was found that age, education, and residence were the major determinants but that the region of education also had a large effect. For regions, the income advantages to blacks increased from the rural South to the non-South. The authors pointed out, however,

that a significant portion of this observed relationship stemmed from the tendency for those with higher income potential to move away from the South.

In further investigations which controlled for a large number of black characteristics, Weiss and Williamson found that "southern rural blacks (educated there) suffer no competitive disadvantage in urban labor markets, North or South." They suggested that other features of rural southern origin may outweigh the disadvantage of low quality education in the South (p. 379):

> An implication is that the geographical shift in population can only improve black incomes by the positive impact on income from migration and by increasing the number of years of school completed by migrants' children.

Education, therefore, plays an important role in contributing to the narrowing of the income gap between blacks and whites. Niemi (1973) found that if education in the South is a good substitute for northern education, as Weiss and Williamson argued, then migration appears to offer some possibility of improving the economic condition of southern blacks. However, if southern blacks' education is discounted because of poorer quality, then the income advantage of migration disappears in a South-to-North move. Nevertheless, Niemi concludes that

> . . . intraregional migration of southern blacks to Atlanta would appear to offer potentially high rewards, particularly to males, and discrimination against migrants based on the source of education would most likely be less prevalent.

Masters (1972) conducted an interesting study which compared Negroes born in the South but living in non-southern SMSA's in 1960 with all Negroes not born in the South and living in non-southern SMSA's. The former group was referred to as lifetime migrants; the latter, the comparison group. (See Table 8.)

The data indicate that Negro migrants did better economically than nonmigrants. Three reasons were suggested. First, migrants tended to move to the more prosperous SMSA's. Second, the group that migrated may have been of higher ability. Third, those who migrated exhibited a stronger desire to improve their economic situations than those who did not; therefore, they may be expected to have worked harder to take advantage of greater opportunities in the North.

Master's study indicated, in his own words, that

> The poverty problems of the urban Negro are much more pervasive than simply the adjustment problems facing Negro migrants from the rural South. . . . Among Negroes currently living in SMSA's outside the South, those born in the South have higher earnings and less unemployment than those born in the North. Therefore, programs aimed at easing the adjustment problems of migrants cannot be expected to lead to any major improvement in the income of urban Negroes.

Table 8. Economic Status of Negro Lifetime Migrants and Nonmigrants

| | Lifetime Migrants | Comparison Group |
|---|---|---|
| For those in the labor force: | | |
| Annual earnings | $2,853 | $2,736 |
| Earnings per week | $ 69.5 | $ 67.5 |
| Weeks worked | 39.8 | 39.0 |
| Unemployment rate | 11.2 | 12.6 |
| Sample size | 1,639 | 880 |
| For the total sample: | | |
| Family income | $4,692 | $4,926 |
| Percent poor | 27.9 | 28.5 |
| Labor force participation rate | 64.7 | 65.2 |
| Sample size | 2,533 | 1,349 |

Source: Masters (1972, p. 414).

It has also been stated that Negroes seem to have stronger emotional and family ties to their current place of residence than the white population. A survey conducted by the U. S. Department of Commerce (1964d) showed that only six percent of Negro families, in comparison to 21 percent of white families, had no relatives in the community where they were residing.

Negroes as a whole were quite responsive to economic incentives, either in the form of better pay or steady work. Negro income levels tended to be lower than those of whites, and a larger proportion of Negroes fell into the lower income-lower mobility rate categories.

Several other studies indicated that when Negroes did move, they tended to end up in much the same financial situation as the one they left. Part of the reason for this situation is the use of informal job search methods of the Negro community as a whole (Lurie and Rayack, 1966). Negro job contacts, especially those involved in moving from the South to the North, are mostly in low-paying occupations and industries. This evidence was also supported by Gallaway (1966) in his study of interindustry labor mobility.

## Mobility of Agricultural Workers

The issue of the movement of the labor force out of agriculture is generally one of overall rural-to-urban migration noted in the United States throughout the 20th century. This movement has been of concern to economists and sociologists because many of the rural migrants lack the educational training or social background necessary to make them other than marginal members of the nonfarm society (Hathaway, 1960). Just as importantly, when rural communities attempt to upgrade their local labor forces, the people in whom local resources were invested are the most likely to leave.

Although some authors have suggested that much of the labor mobility from rural to urban areas is inefficient because the movers are poorly equipped to adjust to urban labor demands (Maddox, 1960), others believe that there has been a substantial amount of purposive movement in response to existing differentials in economic opportunities. Gallaway's (1967a) empirical analysis showed strong relationships between out-migration and earnings and unemployment differentials between rural and urban areas.

Young people represent the bulk of movement out of agriculture, and age seems to be an extremely important factor in explaining gross out-flows from rural areas. Conversely, large amounts of agricultural in-migrants tend to be noticed among older workers. The effect of the age variable on mobility was noted by both Gallaway and Baumgartner (1965), both of whom viewed barriers to mobility such as retirement plans, and skill level differentials as the major causes. Likewise, a large number of older workers returning to agriculture were thought to do so involuntarily because they were the only job opportunities available, even though at a lower wage rate. (See Table 9.)

Farm wage workers, because they lack farm business assets and have fewer ties to the community, were found by Hathaway and Perkins (1968) to be more mobile than farm operators. (See Table 10.) Multiple job holding was primarily a stage in the off-farm mobility process rather than an alternative to off-farm mobility. Multiple job holders were therefore expected to be more mobile than single job holders because of their experience in, and better knowledge of, nonfarm jobs. However, multiple job farm operators who were nonfarm self-employed were thought to be more able to combine farmwork and nonfarmwork and, consequently, less likely to leave farming than those who had nonfarm wage jobs.

The proximity of farm workers to an employment center also proved to be a significant determinant of rates of out-migration from farming. For the nation, the rates were highest for farmers living closest to an SMSA. However, some regions within the nation behaved atypically with respect to the effect of employment centers on farm out-migration. In the Northeast, for example, off-farm mobility rates were highest in counties most distant from an SMSA, while in the North Central and West regions, off-farm mobility rates in counties closest to and in counties furthest from SMSA's were about the same.

Table 9. Gross Rate of Out-Migration from Agriculture by Age, Sex, and Race

| Age | Percentage Rate |
|---|---|
| - 25 | 34.3 |
| 25 - 34 | 18.5 |
| 35 - 44 | 13.5 |
| 45+ | 7.6 |
| **Sex** | |
| Male | 14.0 |
| Female | 15.6 |
| **Race** | |
| Non-Negro | 14.0 |
| Negro | 16.5 |

Source: Hathaway and Perkins (1968).

Table 10. Gross Off-Farm Mobility Rates by Farm Employment Status

| Employment Status | Percentage Rate |
|---|---|
| Farm wage work only | 9.5 |
| Farm self-employment | 1.8 |
| Farm wage work and nonfarm job | 47.3 |
| Farm self-employment and nonfarm wage job | 19.3 |
| Farm self-employment and nonfarm self-employment | 16.4 |
| | 14.2 |

Source: Hathaway and Perkins (1968).

Hathaway and Perkins found that most rural low-income counties did not experience greater off-farm mobility than other areas. They suggested that "it is those farm-employed persons who rely on small local labor markets for a nonfarm job who have the lowest probability of successfully moving out of farm employment."

Of those who did leave farming, 40 percent had lower earnings in their nonfarm job than they had had in their farm job one year previously. In fact, Hathaway and Perkins generally turned up no evidence that long

distance migration pays economic dividends. No relationship between the distance migrated and short-run and long-run gains was found.

Johnson (1968) provides us with some interesting evidence relating to the decision to stay or leave rural areas. Age, of course, was a significant variable, with the decision to stay being reinforced as the individuals got older. Females were more likely to stay than males. The number of jobs a person held also proved to be a significant determinant of the decision to stay. The greater the number of jobs held, the lesser was the desire to stay. The explanation for this effect was that workers who have held a larger number of jobs generally have a history of loose job attachment. Therefore, that history indicates that the worker would be less likely to remain on any new job.

Negroes, in several studies, have been shown to have higher mobility rates out of agriculture than whites. Hathaway and Perkins found that the off-farm mobility rate of Negroes was higher in all regions except the South.

As can be seen from Table 11, Negroes were more frequent movers than non-Negroes, and they tended to move further distances than non-Negroes. In part, an explanation for Negro mobility patterns can be found in two facts. First, Negroes tend to be in the less-skilled jobs for which the main employment opportunities lie in the larger cities. Second, much of Negro geographic mobility has been facilitated through communications with friends and relatives who had migrated before them. The existence of such an information network reduces the trauma of geographic moves.

Table 11. Percentage of Off-Farm Movers Who Migrated, by Race, Region, and Distance

| | Distance Migrated | | | |
|---|---|---|---|---|
| | Did Not Migrate | 51-150 Miles | 151-500 Miles | Over 500 Miles |
| Northeast | | | | |
| Non-Negro | 76.7 | 12.0 | 6.9 | 4.4 |
| Negro | 58.5 | 9.9 | 10.4 | 21.1 |
| North Central | | | | |
| Non-Negro | 76.1 | 10.8 | 7.2 | 6.0 |
| Negro | 56.3 | 11.9 | 13.5 | 18.3 |
| South | | | | |
| Non-Negro | 72.5 | 11.4 | 9.1 | 7.1 |
| Negro | 61.6 | 12.6 | 12.7 | 13.0 |
| Plains | | | | |
| Non-Negro | 58.4 | 14.1 | 16.1 | 10.9 |
| Negro | 51.2 | 18.2 | 21.3 | 9.3 |
| West | | | | |
| Non-Negro | 55.2 | 15.1 | 15.5 | 14.2 |
| Negro | 41.3 | 20.6 | 20.6 | 17.5 |
| Nation | | | | |
| Non-Negro | 67.4 | 12.7 | 11.3 | 8.7 |
| Negro | 58.7 | 13.2 | 13.8 | 14.3 |

Source: Hathaway and Perkins (1968).

## FORECASTING GEOGRAPHIC MOBILITY

The forecasting of geographic mobility is necessarily a hazardous undertaking. The complexity of the determinants of geographic mobility contribute to these hazards.

> In the social sciences, hypotheses are seldom exact since human behavior depends on a large number of factors which we do not fully understand or which are not easily measured. Models of human behavior provide only approximations to actual behavior and therefore include unpredictable elements (Ahamad and Blaug, 1973).

There are at least five criteria upon which a forecast should be judged.

1. Is the forecast accurate?
2. Is the intended forecast fulfilled; e.g., has the forecast yielded, say, an estimate of future in-migration as was intended?
3. Have the assumptions remained valid over the length of the forecast period?
4. Does the forecast fulfill a policy objective?
5. Can the forecast be used as input into other models or policy areas?

Any methodology that could be offered to forecast mobility is subject to at least four limitations. For regional purposes, the relative magnitude of the limitations will, for the most part, determine the kind of forecasting methodology used. These limitations are:

1. data availabilities;
2. available resources--monetary, human, and computer;
3. nature of the variables to be forecast; and
4. economic environment in general.

Planners may be very interested in forecasting net population change due to migration and may be equally concerned with the turnover phenomena which are hidden in a "net" forecast. Separate estimates of in-migration and out-migration are thus generally desirable.

Lowry (1966) and Bramhall and Bryce (1969) present a model, though lacking a sound theoretical base, which can be quite useful in forecasting

the amount of mobility from or to a region. It also provides the greatest amount of detail by age, sex, and race and can be applied using readily available data.

Lowry suggests that the place-to-place model can be very useful when out-migration forecasts are desired without knowledge of destination or when in-migration forecasts are needed without information on origin.

The Lowry-Blanc model (in appendix), by virtue of the fact that very high $R^2$'s are obtained, may prove to be a very good forecasting tool. It does not, however, permit the making of separate estimates of in-migration and out-migration since the dependent variable is net migration.

Gallaway's model of gross and net migration, while providing a sound theoretical base for explaining labor mobility, does not have much potential as a predictive model because the size of the unexplained variation in labor mobility was over 70 percent. In later models of regional flows of labor, however, Gallaway obtained better results. Breaking mobility down into two groups, stayers and nonstayers, Gallaway introduced some new variables into the analysis. For stayers, the equation estimated is given below:

$$\text{Stayers}_1^{\circ} = F \text{ (income levels in region i, age of workers in region i, level of earnings of workers, age group, climate)}$$

The difference between this model and Gallaway's other model (1971) is that this model was designed to explain the lack of mobility rather than the presence of it. The variables included to explain the size of the "stayers" group were in accordance with what was said earlier, except that the unemployment variable was excluded because it was found to be an "insignificant influence on worker behavior." Included, however, was a variable, climate (measured by number of severe [less than 32° or more than 90°F] weather days), which is intended to measure the relative attractiveness of the region itself. This model explained all but 35 percent of the variation across regions in the proportion of nonmovers. Gallaway also proposed a model to explain gross flows between regions and included distance between the two movement points, size (population) of the region, regional earnings, age, age-group earnings, and climate. The results of this model also suggested that all but 35 percent of the variation in gross labor flows among regions could be explained.

These last two Gallaway models could be adapted to predict the behavior of a region with respect to mobility rates. To do so, however, would require that all of the independent variables be estimated for some future time period. Since 35 percent of the variation in regional labor flows has yet to be explained, caution must be exercised.

# CONCLUSIONS

Perhaps the best way to conclude a discussion of the relationship between manpower and educational planning and labor mobility is to repeat Lansing and Morgan's (1967) quote: "Care must be taken not to confuse the effects of mobility with effects of disadvantages which the mobility reduced but could not eliminate."

While mobility may be in correct directions, in terms of movement away from low-income areas to high-income areas, several problems still exist:

1. Is the movement too much or too little?
2. Are the individuals who move any better off than those who do not?
3. Are the communities to which they move any better off?
4. Has lack of skills made mobility a less effective means of combating unemployment in depressed areas?

While these are, for the most part, unanswered question, several judgments can be made. Given regional conditions of income and employment differentials, more mobility appears desirable. Moreover, given the evidence that even workers who are mobile do not necessarily find themselves in competitive economic circumstances, the planner's role must be strengthened. This role must include both training and education as well as policy aimed at promoting job opportunities. The importance of demand--or employment opportunity--is as great as providing properly trained and potentially mobile workers.

The question of community posture in this scheme may go unanswered for some time. Whether the actions of individual communities to optimize their own situations will lead to optimal national education and mobility policy will have to be determined. Lester (1966) and Bakke (1969) have been two of the most vocal proponents of a comprehensive manpower policy which includes, at the very least, guidelines for what regional and national criteria should be with respect to geographic mobility. In line with these suggestions are such policy proposals as relocation allowances.

Relocation allowances have been suggested as a means of encouraging labor mobility since the 1950s. While these allowances act to compensate the mover for part of the economic losses suffered, there are several points that should be considered with respect to their effectiveness. First, most mobility has been shown to involve many purely psychic costs as well as economic ones. As Somers (1967) points out, and as previous research has shown, loss of friends, relatives, and familiar surroundings tend to be significant determinants of labor mobility. Compensation for these psychic losses would be difficult to say the least. Secondly,

encouraging mobility by relocation allowances must also include compensation for the uncertainty of the individual. Pierce (1967) has suggested that relocation allowances remove the risk of an unsuccessful move--unsuccessful in terms of not yielding employment. However, Koziara and Koziara (1966), in reply, note once again that

> Although a sizeable percentage of people have returned to their original homes after relocation, few, if any, do so because they do not have jobs. Studies reveal that problems such as finding a place to live, missing friends and relatives, and failing to adjust to the new community and job are the most important reasons why relocated workers return home.

A third important point is that of externalities--both positive and negative--that stem from labor mobility. If the individual is compensated for any losses incurred, should not the communities involved also be compensated (or taxed) for any externalities which accrue to them? One obvious suggestion to be considered is that the gaining community should compensate the individual who may suffer by relocating.

Again, however, we become entrapped in the question of whose goals local planners are to consider. Philosophical questions aside, the administration of the mobility issue, as far as local manpower and educational planners are concerned, has two dimensions: demand and supply. That is, (1) what is the source of the demand for the output (trained people) of any particular educational institution? and (2) how will all of the potential suppliers react to that demand?

Given our knowledge about the mobility of differently skilled individuals in the labor force, several possibilities arise out of the recognition that mobility will be affected by both the demand for and supply of trained people locally. If the demand for a particular skill is recognized as a generally needed skill, with no direct localized demand incidence, then educational planners are faced with the choice of providing skills needed in the national market or ignoring national demand altogether (in which case, of course, the local educational and training facilities could perhaps be devoted to more pressing local needs). If, on the other hand, the demand for a skill is localized, the choices of the educational planners are either to move to meet these local needs or to continue to allow other regions to provide the supply of this skill. These decisions, regardless of the location of demand, assume that facilities are already available to provide the supply necessary to meet the demand. If the facilities are not presently available, the question remains of the degree to which the expressed demands are going to be met by other localities with existing facilities in terms of national defense.*

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*See P. G. Bock et al. for their attempt to assess the effects of government actions on population distributions in "The Impact of Defense Cutbacks on Employment and Migration: A Preliminary Study of the Problem and Current Governmental and Private Responses to It," Commission on

To the educational planner, it is imperative to view supra-local as well as local needs for trained manpower. If there were no mobility whatsoever, then local educational planners would only have to act to meet their own needs. However, because it has been shown that there is a great deal of mobility, it is likely that the highly trained manpower will move from a region which is "poorer" relative to others. As has been pointed out earlier, a region which possesses characteristics that increase the propensity for a particular group to move out coincidentally possesses disincentives for members of that same group to move in.

If the educational planner calculates that it is beneficial to society not to have a particular occupational group move out of his area (that is, if its movement contributes more costs to society than benefits even though the private benefit/cost ratio may be high), the educational planner has several alternatives, each of which is designed to keep trained personnel (or others) in whom resources have been invested in the local area.

Ruling out political restraint, these alternatives are: (1) to compensate this skilled person so long as the benefits to society of nonmovement outweigh the costs of keeping him immobile, and (2) to create regional characteristics so that private costs and benefits do not conflict with social costs and benefits. If the two methods are judged equally beneficial (and there are no secondary effects from program inputs), the two must be compared on costs, which have been discounted over time. In cases in which the benefits are judged equal, the means of achieving that end at the least cost should be chosen.

The first case involves compensation over some period of time since income streams are flows over time. It is likely that the size of the compensation over time will decrease due to the fact that mobility propensities tend to decline with factors associated with age. The present value of this compensation, however, could be very large.

The second alternative, creating local characteristics which keep and perhaps attract trained people, is one that should be considered carefully. While the initial cost of the second alternative may be great, the efficiency of undertaking such an alternative can only be judged relative to the discounted future costs of compensation used to impede mobility. The creation of local characteristics conducive to attracting trained personnel and keeping the ones they have might involve capital importation or demand creation and perhaps infant industry subsidies.

The passage of the Appalachian Regional Development Act in 1965 and earlier programs such as the Area Redevelopment Administration and

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Population Growth and the American Future, Research Reports, Vol. V, Population Distribution and Policy, edited by Sara Mills Mazie (Washington, D. C.: Government Printing Office, 1972), pp. 357-380.

the Economic Development Administration give some indication of interest in this sphere. The wording in the Appalachian Regional Development Act makes it clear which regions are to be singled out for public investments (Leven et al., 1970, p. 12):

> The public investments made in the region under this Act shall be concentrated in areas where there is a significant potential for future growth, and where the expected return on public dollars invested will be the greatest.

Leven et al. point out that the determination of the "proper" regions may be difficult to make, and in fact the "intensive lobbying for unrestricted grants to states may stem from a fear that the federal government would not discriminate effectively enough among regions in its prosecution of development programs."

Programs such as the Area Redevelopment Administration, among other activities, make loans available to communities for social overhead capital (water treatment and sewage disposal). If required as a basis of fund disbursement, the kind of productivity (rate of return) criterion implied in the Appalachian Act would qualify few poor areas for funds (Bowman and Haynes, 1963, p. 263).

Continuing evidence of regional differences in income and unemployment indicates that workers' reactions to market forces are not potent enough to achieve full employment and high standards of living for all. Relocation allowances have been attempted on a minor scale in the United States to overcome three situations which are likely to exist in a market economy: (1) the financial cost of moving may represent a significant barrier to geographic mobility of poor and/or unemployed workers; (2) high labor demand in one area can be matched with excess labor supplies in another area only if workers can be brought to the former; and (3) area redevelopment as a means of bringing jobs to the people has proven not to be a panacea.

As Schnitzer (1970) points out, the United States is the only major industrial country without a significant national labor mobility program. (See also Fairchild, 1970.) Experimental projects have, however, been granted five million dollars under the MDTA. Four of the more significant projects, involving approximately one-fourth of all workers who received relocation assistance, were conducted in Michigan, Mississippi, North Carolina, and West Virginia. Each differed with respect to target groups and administrative units. In West Virginia older workers displaced from coal mining by automation and younger workers were the target groups. The North Carolina and Mississippi projects focused upon workers in agriculture and in rural areas in general. The Michigan project focused upon workers in depressed northern Michigan areas in an attempt to gain employment for them in more industrialized centers in Michigan and Wisconsin. The administration of the programs varied from state employment services (West Virginia) to private organizations (Mississippi and North Carolina).

In nearly every case, high rates of return of relocatees were recorded. Some of the early projects reported that as many as a third of the relocatees had returned home after only two months.

Specifically, the West Virginia relocation experiments evolved in response to high local rates of unemployment, poverty, and the general feeling that regional development programs would not have a significant impact in the near future. The average cost of relocation was less than $150 per person. Subsequent programs in West Virginia involved higher relocation costs, an average of $368 per person. Over the period 1965 to 1968, a total of 1,455 persons were relocated.

The West Virginia experience pointed out several facts which could apply to nearly all relocation experiments:

1. There are a number of workers who are willing to move <u>without</u> relocation assistance.

2. Those who were successfully relocated had high rates of turnover at their new places of employment; but once their home ties were severed, they remained mobile.

3. The rate of return of relocatees to the home area could be reduced effectively through counseling services. It was also noted that many of the returning relocatees returned with new skills which enabled them to find employment in the home area.

The Michigan relocation project further stressed the potential of relocation allowances in the directed movement of workers. Workers who were relocated in Michigan were asked whether they would have moved without the relocation assistance they received. Of the 253 workers polled, 81 replied that they would not have moved without it; 60 replied that they would have moved anyway but that the assistance permitted an earlier move; 73 might have moved; and the remaining 39 would have moved anyway.

While these four projects were among the largest, 37 projects in 28 states were funded. A total of 12,234 workers were relocated with an average cost per relocation of approximately $700 (Schnitzer, 1970).

In summary, when the market does not provide the proper incentives to geographic mobility, relocation allowances appear to be one means of removing a barrier to mobility. However, relocation allowances serve to eliminate only one of the barriers to geographic mobility. Others may be overcome by providing better information concerning opportunities in other labor market areas, but, as Schnitzer states, "Relocation by itself can do little or nothing to overcome the disolidities incurred through the lack of individual preparation for employment." The implications for educators and manpower planners are obvious in these cases. Geographic mobility, even when aided or induced through relocation allowances, will be effective only if the population is made employable.

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# APPENDIX

## SELECTED REGRESSION EQUATIONS AS ESTIMATED

Appendix Table 1

Regression Results: The Rate of Immigration as a Function of the Rate of New Job Formation

| Sex and Age | White | | | Nonwhite | | |
|---|---|---|---|---|---|---|
| | Constant | Coefficient (Standard Error) | F Ratio | Constant | Coefficient (Standard Error) | F Ratio |
| Male | | | | | | |
| 15-19 | 29.3181 | 0.7088 (0.0808) | 76.9004 | 97.9867 | 0.1296 (0.1759) | 0.5425 |
| 20-24 | 88.9222 | 1.0388 (0.1417) | 53.7578 | 214.1334 | 0.1718 (0.3236) | 0.2818 |
| 25-29 | 98.7088 | 0.8806 (0.1041) | 71.5937 | 167.2206 | 0.1128 (0.2325) | 0.2353 |
| 30-34 | 45.1334 | 0.8514 (0.0962) | 78.3622 | 101.7132 | 0.1347 (0.1358) | 0.9834 |
| 35-39 | 17.8750 | 0.8041 (0.0908) | 78.3970 | 79.6221 | 0.0794 (0.0989) | 0.6446 |
| 40-44 | 4.2915 | 0.7012 (0.0798) | 77.1456 | 56.9212 | 0.0815 (0.0793) | 1.0550 |
| 45-49 | -4.4984 | 0.5800 (0.0692) | 70.1726 | 36.9624 | 0.1200 (0.0630) | 3.6335 |
| 50-54 | -9.7468 | 0.5181 (0.0642) | 65.0533 | 35.7930 | 0.0552 (0.0535) | 1.0620 |
| 55-59 | -15.4685 | 0.4993 (0.0662) | 56.8186 | 26.8775 | 0.0650 (0.0425) | 2.3459 |
| 60-64 | -27.8047 | 0.5479 (0.0812) | 45.4999 | 24.2003 | 0.0243 (0.0376) | 0.4198 |
| Female | | | | | | |
| 15-19 | 24.1294 | 0.6055 (0.0710) | 72.6477 | 110.2266 | 0.0030 (0.1466) | 0.0004 |
| 20-24 | 78.1121 | 0.8864 (0.1073) | 68.2808 | 199.2222 | 0.0289 (0.2786) | 0.0107 |
| 25-29 | 68.1587 | 0.9566 (0.1115) | 73.6308 | 150.3807 | 0.0440 (0.2070) | 0.0451 |
| 30-34 | 25.5866 | 0.8609 (0.0964) | 79.8380 | 92.3001 | 0.0780 (0.1224) | 0.4068 |
| 35-39 | 8.1480 | 0.7803 (0.0875) | 79.6070 | 63.0918 | 0.0863 (0.0937) | 0.8478 |
| 40-44 | -2.5175 | 0.6206 (0.0717) | 77.0074 | 51.6189 | 0.0383 (0.0719) | 0.2845 |
| 45-49 | -9.2859 | 0.5371 (0.0665) | 70.0929 | 35.5932 | 0.0640 (0.0590) | 1.1775 |
| 50-54 | -13.6189 | 0.5236 (0.0659) | 63.2064 | 39.8792 | 0.0402 (0.0651) | 0.3827 |
| 55-59 | -22.8685 | 0.5702 (0.0777) | 53.9154 | 33.3405 | 0.0514 (0.0522) | 0.9718 |
| 60-64 | -34.5282 | 0.6322 (0.0937) | 48.4482 | 30.3086 | 0.0322 (0.0522) | 0.3795 |

Source: Bower (1972).

## Classical Gravity Model

$$\log M_{ij}o = A_o + A_1 \log L_io + A_2 \log L_jo + A_3 \log D_{ij} + U$$

where: $M_{ij}$ = net migration from i to j

$A_o$ = intercept

$L_io$ = nonagricultural population in city $i^o$

$L_jo$ = nonagricultural population in city $j^o$

$D_{ij}$ = distance from $i^o$ to $j^o$.

Appendix Table 2

| Dependent Variable | Independent | | | | $R^2$ |
|---|---|---|---|---|---|
| $\log M_{ij}o$ | $A_o$ | $\log L_io$ | $\log L_jo$ | $\log D_{ij}o$ | |
| | -7.9098 | 1.01863 (.048)*** | 1.02273 (.05146)*** | -.25711 (.346) | .5126 |

***significant at .001 level.

## Expanded Gravity Model

Dependent variable measures flow from $i^o$ to $j^o$ only with the addition of two independent variables: (1) unemployment at origin and destination ($U_{i,j}$), and (2) wages at origin and destination ($W_{i,j}$). All variables are converted to log linear form.

Appendix Table 3

| Variable | Regression Coefficient | Standard Error |
|---|---|---|
| Intercept | -12.74999 | |
| $\log U_i$ | -.13304 | .148 |
| $\log U_j o$ | -1.29551*** | .146 |
| $\log W_i o$ | -.02657 | .389 |
| $\log W_j o$ | .24230 | .373 |
| $\log L_i o$ | 1.04734*** | .054 |
| $\log L_j o$ | 1.08592*** | .059 |
| $\log D_{ij} o$ | -.49311*** | .055 |
| $R^2$ = .5567 | | |

***significant at .001 level.

Source: Lowry (1966).

Lowry-Blanco Model

The variables included in this model are expressed as a rate per thousand 1950 population of the SMSA.

$dM_i$ = net change in population attributable to migration

$dP_i$ = net change in the number of residents 15-64 years of age in the absence of migration

$dQ_i o$ = net change in civilian nonagricultural employment

$dA_i$ = net change in the number of armed forces personnel

$dE_i$ = net change in the number of school enrollees 14-29 years of age

$\alpha I_i$ = percent change in median incomes

Two models are proposed, with the second differing from the first in the definition of the population group.

Model II = $dM_io^*$ = net change in population 15-64 years of age attributable to migration, per thousand of 1950 SMSA population

Appendix Table 4

Model I Dependent Variable $dM_i$

| Variable | Regression Coefficient | Standard Error |
|---|---|---|
| Intercept | -30.798 | |
| $dP_io$ | -1.028*** | .263 |
| $dQ_io$ | 2.202*** | .160 |
| $dA_io$ | .780 | .466 |
| $dE_io$ | .729 | .662 |
| $dI_io$ | -.717 | .682 |
| $R^2$ = .9744 | | |

***significant at .001 level.

Appendix Table 5

Model II Dependent Variable $dM_io$*

| Variable | Regression Coefficient | Standard Error |
|---|---|---|
| Intercept | 10.565 | |
| $dP_io$ | -.648*** | .109 |
| $dQ_io$ | 1.428*** | .067 |
| $dA_io$ | 1.179*** | .195 |
| $dE_io$ | .529 | .275 |
| $dl_io$ | -.734* | .284 |
| $R^2$ = .9899 | | |

*significant at .05 level.

***significant at .001 level.

Appendix Table 6

| Dependent Variable | Independent Variable | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Age | Sex | Marital status | Size of family | Number of family moved | Number of previous jobs | Length of residence | Race | Constant | $R^2$ |
| Stayer=0 | .0158 | -.2292 | -.3405 | -.1429 | .1103 | -.1183 | .1513 | .2909 | .1394 | .8264 |
| Leaver=1 | (.0092) | (.1091) | (.1645) | (.0568) | (.0478) | (.0479) | (.0196) | (.1028) | | |

Source: Johnson (1968).